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THE

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MEDICAL JOURNAL.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*On the Treatment of Pneumonia.* By ALEXANDER SMITH, M.D. Edin., Surgeon Royal Artillery.

THE following facts respecting the cases of pneumonia, treated in the hospital of the 47th Regiment, at various stations in Canada, between March 1862 and September 1865 (the period of my charge of that corps), are placed on record as a contribution to the data still required to enable the profession to arrive at definite conclusions, not only on the question of the treatment of pneumonia, but also as regards some points in the nature of that disease. The cases which came under observation occurred chiefly among soldiers of the 47th Regiment, but those of a few men of other corps, who were treated in the same hospital, are also included in what follows. The subjects of the attacks were all males, and the total number treated amounted to 108 cases, of whom 3 died, giving a mortality of 1 in 36.

The cases were distributed over the period in question as under:—

TABLE, No. I.

Years.	Periods.	Cases.	Deaths.	Remarks.	Stations.
1862	Mar. to Dec.	33	1	Priv., Ar. Hos. Cor.	Montreal.
1863	Jan. to Dec.	42	1	Corporal, 47th Regt.	Montreal, 5 m. Kingston, 7 〃
1864	Jan. to Dec.	24	1	Private, 47th Regt.	Kingston, 5 〃 London, 3 〃 Hamilton, 4 〃
1865	Jan. to Sept.	9	...	. . . .	Hamilton, 4 〃 Toronto, 5 〃
	Totals......	108	3		

The 47th Regiment arrived in Canada in July 1861; and between that time and September 1865, the deaths above recorded were the only casualties which it suffered by pneumonia; that disease having, in the period named, caused the loss of only two men to the corps, the third man who died having been at the time only temporarily attached to it. The ages of the men attacked ranged from fifteen to forty-four, as under:—

TABLE, No. II.

Years of Age.	No. of Cases treated.	No. of Deaths.
15 to 20	3	0
20 to 25	31	2
25 to 30	47	0
30 to 35	21	1
35 to 40	5	0
44	1	0
Totals,	108	3

Seventy per cent. of the whole attacks occurred in the periods of the different years extending from December to March inclusive; but the months of March, April, and May, were those which gave the highest numbers, having supplied respectively 21, 14, and 16 cases of the whole. The fewest seizures happened in the periods from July to October inclusive; whilst the highest number, 21, and the lowest, 1, recorded in any single month, fell respectively in March and September.

In attempting to analyze these cases, in order to estimate the amount of influence exerted on their duration and mortality by the nature of the treatment adopted, it will be desirable to examine those of each year separately, as well as to make a general comparison of the whole, adding such details of the characteristic cases as may give a general idea of the forms in which the disease occurred. In order, also, the better to show the effects of treatment, the cases will be classed into three divisions, according to the nature of the remedies employed, which may be stated, in a general way, as under:—

1*st*, Those cases in which general bloodletting was employed, at the outset of the disease, in conjunction with the application of turpentine fomentations to the chest, and the administration of tartar emetic in ¼-gr. doses. The latter remedy was given at first every hour or every second hour, according to the urgency of the symptoms, until vomiting or some decided impression on the force of the circulation was induced. Afterwards, when these results had been produced, the intervals between the doses were extended to three or four hours whilst the symptoms continued with any degree of urgency. Finally, it was given only three times a-day. In cases where symptoms of nervous excitement existed, or the bowels became much relaxed, a few drops of laudanum were given with each dose of the antimony. In some of the early cases, calomel and opium, or hydrargyrum cum creta was administered; but the use of mercury in any form, with a view to the induction of its constitutional action, was soon entirely abandoned, it having become evident that any apparent good effects which resulted from the administration of that drug were more than counterbalanced by the deterioration of health which, for some time, followed its employment.

When the force of the disease had been broken, and convalescence approached, bicarbonate of potash was given three times a-day, either in infusion of senega or water,—at first in the intervals between the doses of tartar ermetic, but alone, after convalescence had been established, and the administration of the latter remedy was no longer considered necessary. Large blisters also were applied in those cases where, after other treatment had been employed, persistent pain indicated that pleuritic affection existed. Wine was likewise prescribed when, after the force of the disease had been broken, there existed signs of nervous disturbance indicated by a degree of increased frequency of pulse to which the rate of the respiration and the temperature of the body did not bear a due proportion.

It was also given, at any time in the course of the disease, when the pulse became weak. It may also be added that, as a general rule, a purgative of a drachm of compound jalap powder, with two grains of calomel, was administered on admission, provided the bowels were not already relaxed; but purging, beyond what might be necessary to obviate constipation, was not afterwards had recourse to as part of the treatment.

2d, The few cases in which cupping, followed by the other treatment detailed above, was employed instead of general bloodletting.

3d, Those attacks in which neither general nor local bleeding was had recourse to, but where reliance was placed on the use of turpentine fomentations, and the employment, according to the circumstances of the case, of the other remedies already mentioned, but with, in general, an earlier use of wine, where support was indicated.

In estimating the duration of the disease, the outset of the attack is reckoned from the occurrence of the rigor, and recovery is counted from the day on which the urgent symptoms had disappeared, and the patient was, as a general rule, placed on a better diet. The full periods of residence in hospital are also given; but it will be necessary to bear in mind that in this respect the results obtained in civil and military hospitals cannot fairly be compared with each other, because, in the majority of cases occurring among soldiers, the period of residence is, from the requirements of military duty, much longer than would be necessary in the case of a patient under treatment in a civil hospital, for an attack of pneumonia of equal severity.

Experience in the management of the sick of corps also has led me to discontinue the practice of allowing men to be convalescent in barracks, unless under peculiar circumstances of rare occurrence, and to adopt the system of detaining every soldier in hospital, who may have been under treatment there, until fit to undertake at once any duty he might be liable to be called upon to perform. This consideration likewise will, in respect to the period of total residence in hospital, exert an influence on it to the disadvantage of a military hospital, when any attempt is made to compare the results of treatment in civil and military practice.

But in addition to the increased period of residence in hospital, which followed from the causes above named, the fact that not less than 70 per cent. of all the cases occurred during the most trying part of a Canadian winter, had likewise a very important influence on the duration of the period in question, as any increased severity of the weather often rendered it prudent to subject a soldier recently passed through a severe pneumonia, although in all respects well, to a still further period of detention in hospital, in the hope that a favourable change of weather might enable him to return to an every-day mode of life, requiring at all times during the winter months much exposure, not only in the course of duty, but even from the arrangements peculiar to a soldier's residence in a Canadian barrack.

Of the 33 cases treated between March and December 1862, 14 were bled from the arm at the outset of the disease, 3 were cupped, and 16 were neither cupped nor bled. The average duration, counting from the date of the rigor to the beginning of convalescence, in the 14 cases in which bloodletting was employed was $9\frac{11}{14}$ days, the shortest period 5 days, the longest 15; and the average total residence $23\frac{5}{14}$ days; the shortest period 9 days, the longest 58. Three cases, however, whose periods of total residence were 58, 47, and 25 days, had suffered relapses, after apparent recovery, on the twenty-sixth, nineteenth, and ninth days respectively. Of these 14 cases, 3 were bled more than once in the course of this disease. The first, a case of single pneumonia, was bled to 16 oz. on the third, and to 10 oz. on the fifth day of the disease: duration, 12; total residence, 28 days. The second, a case of double pneumonia, was bled to 14, 8, and 7 oz., between the first and fifth days; period of recovery, 8, and of total residence 17 days. The third, a case of single pneumonia, was bled twice, on the first day of the disease, to 7 and 6 oz. This case recovered on the sixth, and was discharged, to duty, on the fourteenth day of the disease. In the remainder of the cases, blood was drawn once in the course of the attack, and the quantity varied from 8 to 16 oz.,—average $12\frac{1}{3}$ oz. Of these 14 cases which were bled, 3 were double pneumonias, the remainder single, and all recovered.

Three cases lost blood by cupping only, but were otherwise treated much as above described, and with the following results:— The first case, one of double pneumonia, was cupped to 4 oz. on the fourth, and died on the twelfth day of the disease. The second, a case of single pneumonia, was cupped to 8 oz. on the fourth, and recovered on the ninth day of the disease,—total residence, 23 days. The third, also a case of single pneumonia, was cupped to 6 oz. on the third, and recovered on the eighth day of the disease,—total residence, 27 days.

Of the 16 cases treated without bloodletting in any form, the average period of recovery was $8\frac{9}{16}$ days,—the shortest period 2, the longest 13 days. The average total residence was $15\frac{5}{8}$ days,—the shortest period 5 days, the longest 42. All these latter cases were, however, examples of the disease in a mild form, and 11 out of the 16 occurred during warm weather, between June and October. The existence of a milder temperature, whilst it caused attacks of a less severe character, led also to the total residence in hospital being shorter than usual in proportion to the periods of recovery. These last were all cases in which only one lung was attacked.

Of the 42 cases admitted in 1863, 5 were bled from the arm, and all recovered. The remainder were neither cupped nor bled, and of these one died. Of the cases not bled, one was received over from another hospital convalescent, and was discharged after 36 days' residence in hospital. Three more of the same number were treated in the Forty-Seventh hospital, but during my absence. The details of these 4 cases are therefore not included with the following. Of the 5 cases which were bled, 4 were simple, and one complicated. The average period of recovery of the 4 simple cases was 9 days, the shortest period 7 days, the longest 11. Average period of total residence, $30\frac{3}{4}$ days,—shortest period 24 days, longest 35. Of these cases, one was a double pneumonia, in which bloodletting was employed to the extent of 12 oz. in the fourth day of the disease, and to 15 oz. on the sixth. Recovery took place on the eleventh, and the man was discharged to duty on the thirty-second day. In the three remaining cases only one lung was affected, and the average quantity of blood drawn was $12\frac{1}{3}$ oz. The fifth case was one of double pneumonia grafted on bronchitis, to which the man was liable. The pneumonic symptoms disappeared in 25 days, but the patient was under treatment for 71 days before the complicating bronchitis abated. Bloodletting, to 12 oz., was employed in this case at the outset of the disease.

Of the remaining 33 cases treated without bleeding, one died on the twenty-fifth day of the disease, and the average period of recovery of the remainder was $8\frac{9}{32}$ days,—the shortest period 2 days, the longest 18. The average period of total residence was $33\frac{3}{32}$ days,—the shortest period 5 days, the longest (in a case where the greater portion of one lung became, for a time, consolidated) 128. These 33 cases were scattered over the whole year, but the larger proportion of them occurred in the winter months.

Of the 24 cases admitted in 1864, 8 were treated in my absence.

In 7, of the remaining 16, bloodletting was employed, and, of those so treated, one case died on the seventh day of the disease. The average period of recovery of the other six was $6\frac{1}{2}$ days,—the shortest period 4 days, the longest 8. The average period of total residence was $24\frac{1}{2}$ days,—the shortest period 20 days, the longest 29. Of the remaining 9 cases treated without loss of blood, the average period of recovery was $6\frac{7}{9}$ days,—the shortest period 4, the longest 10 days; and the average period of total residence was $23\frac{1}{3}$ days,—the shortest period 9, the longest 44 days. Of the 7 cases which were bled, one was a double pneumonia, the remainder were single. The whole of the 9 cases treated without bloodletting were examples of single pneumonia.

Of the 9 cases which were admitted between January and September 1865, 4 were bled from the arm, at the outset of the disease, in quantities varying from 10 to 14 oz. The average period of recovery of these cases was $7\frac{1}{4}$ days,—the shortest period 6, the longest 8 days; and that of total residence, $23\frac{1}{4}$ days,—shortest 20 days, longest 26. Of the remaining 5 which were not bled, the average duration was $6\frac{4}{5}$ days,—the shortest 4, the longest 9 days; and the average total residence, $22\frac{1}{5}$ days,—the shortest period 15, the longest 30 days. These were all cases of single pneumonia.

As regards the relative frequency of the side of the body attacked, the right lung alone was the seat of disease in 58 per cent. of all the cases, the left lung in 24, and both lungs together in 17 per cent.

The following tables will show the relative proportions borne by the periods of recovery and total residence in each year, to those of the other years under observation, in the two classes of cases according as they were treated (1*st*) with and (2*d*) without general bloodletting:—

1*st*, Average duration of uncomplicated cases (one complicated being omitted), treated by general bloodletting:—

TABLE, No. III.

Years.	Period of Recovery.			Period of Total Residence.			Cases.
	Average.	Shortest.	Longest.	Average.	Shortest.	Longest.	
1862	$9\frac{13}{14}$	5	15	$23\frac{5}{14}$	9	58	14
1863	9	7	11	$30\frac{3}{4}$	24	35	4
1864	$6\frac{1}{2}$	4	8	$24\frac{1}{2}$	20	29	6
1865	$7\frac{1}{4}$	6	8	$23\frac{1}{4}$	20	26	4
						Total...	28

2*d*, Average duration of uncomplicated cases treated without general bloodletting:—

TABLE, No. IV.

Years.	Period of Recovery.			Period of Total Residence.			Cases.
	Average.	Shortest.	Longest.	Average.	Shortest.	Longest.	
1862	$8\frac{9}{16}$	2	13	$15\frac{6}{8}$	5	42	16
1863	$8\frac{9}{32}$	2	18	$33\frac{3}{32}$	5	128	32
1864	$6\frac{7}{9}$	4	10	$23\frac{1}{9}$	9	44	9
1865	$6\frac{4}{5}$	4	9	$22\frac{1}{5}$	15	30	5
						Total...	62

1*st*, These tables show very distinctly, by numbers, what my own observation of the cases in detail had led me to conclude, viz., that the results noticed in cases treated by general bloodletting were, unquestionably, of a more uniform character than those which were observed in cases which recovered without the use of that remedy. This will best be understood from a statement of the average range in days, between the average lowest and highest periods of recovery and residence in hospital, which were as 5 and 19, to 9 and 53 respectively, for 28 cases bled, as compared with 62 not so treated.

2*d*, They demonstrate, also, that the relative periods for which the cases were under treatment in 1863 were considerably greater than for any of the other years under consideration; and, to account for this difference, two sets of conditions may be stated as having probably more or less influenced its production. One of these had reference to the circumstances in which the men themselves were actually placed; the other, and probably not the least important of the two, depended on a temporary change which my own views underwent as to the mode of treatment to be adopted.

The first consideration referred to was the removal of the regiment from a barrack placed in a comparatively open, elevated, and airy position, in the town of Montreal, and from the advantages of an hospital where the convalescent sick could have the benefit of open-air exercise in almost any weather, to a set of buildings temporarily occupied as a barrack, and situated in a crowded, low-lying, and unhealthy part of the same town, with the disadvantage, moreover, of an hospital which, from its position and construction, was not only indifferently lighted and ventilated, but was likewise unprovided with means of open-air exercise for the convalescent sick during winter weather. That the circumstances of the soldiers' accommodation had an influence on the type of their diseases, I have very little doubt; and, accordingly, the attacks of pneumonia from which they suffered whilst those conditions lasted were of a more asthenic type than those which came under observation in the course of the previous and subsequent years, when their barrack accommodation was better. I have also a strong suspicion that the circumstances of the men whilst under treatment in hospital, more especially in respect to open-air exercise in the course of their convalescence, materially influenced the duration of their attacks.

To the circumstance, however, of a temporary change having taken place as regarded my own views of the best plan of medical treatment to be adopted, I am inclined to attach the most importance of all; and I will now briefly state what that change was, and how it originated. Having observed that, under the influence of the warm weather of the summer and autumn of 1862, the cases of pneumonia which occurred in the course of those seasons were much milder in character than those which had occurred during the winter and spring months, I was led to discontinue the use of bleeding; and, having remarked the apparent success which attended that less active plan of treatment, at a time when my mind had been rendered undecided on the question of bloodletting by the strong feeling of opposition to its employment which then existed among the members of the medical profession, I was led to consider, whether, in resorting to bloodletting as the most essential part of the treatment of a disease asserted to be the same under every variety of circumstances, and at all times better treated without that remedy, I had not, after all, adopted a course which was unnecessarily severe.

I was, therefore, induced to inquire whether equally satisfactory results might not, on the whole year, have been obtained without loss of blood at all. Bloodletting was, accordingly, in 1863, employed only in such of the cases as, at the outset, threatened to be unusually severe, and of a nature to deter me from submitting them to the risk of what was virtually an experiment. A review, however, of the results of this less active plan of treatment forced upon me the conclusion that in no respect were they equal to those obtained under a more general practice of bloodletting, the good effects of which were in no way rendered more apparent than by the fact, that, whereas in 1862, when the disease had been actively treated, the lung affection very rarely overstepped the stage of congestion or engorgement, in 1863, on the contrary, that of hepatization rendering a lengthened convalescence inevitable, was frequently reached in cases subjected to a less effective method of treatment.

I therefore resolved to resume the treatment by bloodletting, so soon as the attacks of 1864 should have changed from the mild type of summer to the more severe form of the winter months. This was accordingly done, and with the success anticipated, excepting in the first serious attack of the season, which was, unfortunately, not bled at the outset of the disease: its early indications having been believed to be favourable to recovery without bloodletting. In that case, however, bleeding was subsequently employed, but at a stage of the complaint when there was very little certainty of its making any impression for good on its progress. The following table of the ratio per cent. of cases bled, and of the average periods of recovery and total residence, for the whole of the cases of each year, will show at a glance—so far as that can be taught by numbers—the influence exerted by bloodletting on the duration of the disease:—

TABLE, No. V.

Years.	Per-centage of Cases Bled from the Arm.	Average Periods of Recovery of Total Cases in each Year.	Average Periods of Total Residence of all Cases in each Year.
1862	$42\frac{14}{35}$	$8\frac{4}{5}$	$20\frac{4}{5}$
1863	$13\frac{3}{5}$	$8\frac{1}{5}$	$32\frac{3}{5}$
1864	$37\frac{1}{5}$	$6\frac{2}{5}$	$23\frac{12}{15}$
1865	$44\frac{4}{5}$	7	$22\frac{3}{5}$

The subjoined details of a few of the cases will give the reader a good general idea of the whole. The summaries, also, of the three fatal cases with which these extracts close, will, I think, prove instructive:—

CASE I.—Private Henry Veasey, 47th Regiment, age 28.—*November 28th*, 1864.—A stoutly made man, of bad character, who reported himself sick yesterday morning, and stated that, although feeling slightly ill from a cold for a few days previously, he had been fit for duty until that morning, when he was attacked with rigor, followed by cough and pain in the right breast. No evidence of pneumonia was then detected on examination of the chest. A purge was administered, and he was ordered to bed.

This morning there are undoubted signs of pneumonia affecting the greater part of the right lung; the expectoration is rust-coloured and tenacious, and the cough causes great pain of the right breast. Pulse 80; respiration 28. Was this morning bled to ℥xvj., which he bore without syncope. To have ant. tart. gr. ¼, every third hour, unless much nauseated. Turpentine fomentations to the affected side three times a-day. Diet, spoon (tea, bread, and arrowroot), with two pints lemonade for drink.

29th.—Pulse 84; resp. 24; crepitation audible, but more air entering the lung than on yesterday. Expectoration copious, very fluid, and plum-juice-coloured; not so much pain. Continue the treatment by antimony and fomentation as above. Diet and drink as on yesterday.

30th.—Pulse 60; resp. 20; air entering the lung freely, with coarse crepitation; expectoration fluid, copious, and rust-coloured. Treatment and diet as on yesterday.

December 1st.—Pulse 68; respiration natural; steadily improving; no pain. Air entering the lung freely, with large crepitation; expectoration copious, fluid, and still rust-coloured, but less so than on yesterday. Antimony to be given three times a-day, and fomentations to be used twice a-day. Beef-tea diet, lemonade.

3d.—Pulse 72; resp. 22; air entering the lung freely; very little crepitation; expectoration scarcely at all tinged, but slightly purulent. To have bicarb. potassæ, gr. xv., in aquæ ℥iv. three times a-day. Omit the antimony and fomentations. Beef-tea and lemonade.

5th.—Pulse 68; resp. 18; no expectoration; scarcely any cough; air entering the lung freely; coarse crepitation at the base, with the expiratory murmur only. Bicarbonate of potash as above. Diet low.

7th.—Pulse 60; resp. 20; air entering the whole lung; prolonged sound of expiration at the base, with harshness more than crepitation; no cough or expectoration. Treatment as above. Diet low, with two eggs and one pint of milk.

10th.—Respiration natural; no cough or expectoration. Treatment and diet as above.

20th.—No relapse; now quite strong; discharged to duty. Diet, roast chop from the 11th, with one pint beer daily from the 14th.

CASE II.—Private Michael Tierney, 47th Regiment, age 28.—*November 29th*, 1864.—Admitted yesterday from the guard-room, in which he was confined for drunkenness on the 26th inst. On the night of the 27th was attacked with rigor, which was followed by cough. On admission there were distinct signs of pneumonia affecting the greater part of the right lung, and attended with pain and rust-coloured tenacious expectoration. He was bled to ℥xij., without syncope, in the course of the evening.

Passed a restless night. Pulse now 120; resp. 39; crepitation audible over the greater part of the right lung; expectoration plum-juice-coloured, but not of a very dark tint. The blood drawn did not show the "buffy coat." To take ant. tart. gr. ¼, with tinct. opii. m. x., every fourth hour; half an ounce of wine every second hour. Turpentine fomentations to the affected side of the chest three times a-day. Diet, spoon, with lemonade.

30th.—By last evening the pulse had fallen to 116; to-day it is 94; resp. 28. Feels considerably better. Air entering the lung freely; coarse crepitation over the greater part of it; expectoration copious, fluid, and tinged rust colour. Remedies, diet and wine as above.

December 1st.—Feels better; pulse 84; air entering the whole of the lung, but crepitation very well marked with the sound of expiration; expectoration fluid and less tinged; no pus in it; slight pain at the lower part of the affected side. Had some sleep in the course of the night, and is less nervous in appearance. Skin moist; tongue loaded with a white fur, but also moist. Continue the antimony with opium, as above, every fourth hour; also the fomentations as before. Diet and wine as above.

3d.—Pulse 80; resp. 28. Has steadily improved since last report. Skin moist; no pain; much less cough; expectoration copious, fluid, and moderately tinged. To have antimony with opium, as above, three times a-day. The fomentations to be omitted. Beef-tea diet from the 2d, wine and lemonade as before.

5th.—Pulse 76; resp. 25. Has steadily improved since the 3d. Air entering the lung freely; coarse crepitation at the base; expectoration fluid, mucous, and untinged; slight pain at the lower part of the right side of the chest on full inspiration. The antimony was omitted yesterday, when potassæ bicarb. gr. xv., in infus. senegæ ℥ij., was ordered three times a-day. The latter to be continued, a blister to be applied to the seat of pain, and pulv. Doveri gr. xij. given at bedtime. Beef-tea diet, wine and lemonade as before.

6th.—Continues steadily improving; very little cough, and a mere trace of expectoration. The blister acted well, and has quite removed the pain complained of in the region of the lower false ribs of the right side, and which was probably pleuritic in its character. Diet and treatment as above.

10th.—Pulse 78; resp. 24; air freely entering the lung, with the exception of a small portion at the base where the respiratory murmur is obscured, but without crepitation; slight increase of dulness on percussion at the spot in question; scarcely any cough; slight, untinged, mucous expectoration. Diet low from the 7th, with wine, two eggs, and one pint milk on this date. The alkali continued as above.

13th.—Steadily improving; neither cough nor expectoration. Omit the medicines. Diet as above.

22d.—Has been steadily improving in strength since last report, and there has been no return of pulmonic symptoms; but being a prisoner he is detained longer than usual under observation. Diet, roast chop from the 14th, with one pint of beer daily from the same date.

25th.—Quite well; discharged to duty. Diet and beer as above.

Case III.—Private John Walsh, 47th Regiment, age 20.—*November 29th*, 1864.—Attacked yesterday morning with rigor, which was followed by cough. Admitted into hospital in the evening, suffering from severe cough, attended with pain in the right side of the chest, and with obscurity of the respiratory murmur at the base of the corresponding lung. There was no expectoration. Pulse 108, full and bounding. He was bled to ℥xvj., with marked relief to his symptoms. This morning the pulse is 96; respiration 28, and attended with less pain; air entering the lung with tolerable freedom; crepitation at the lower part, and the sound of expiration prolonged. Blood drawn last evening presents the "buffy coat." To have ant. tart. gr. ¼, every third hour; turpentine fomentations to the chest three times a-day. Spoon diet, with lemonade.

30th.—Now free from pain. Pulse 60; resp. 20; air entering the lung; much less cough; coarse crepitation, mixed with bronchitic rales; expectoration muco-purulent, only one streak of blood. Diet and remedies as above.

December 1st.—Not quite so well as on yesterday. Cough more troublesome; expectoration slightly tinged with blood; air entering the lung, but crepitation very marked with the expiratory sound,—that of inspiration very little audible. Pulse 92, and slightly weak. Continue the antimony, as above, every third hour, also the fomentations three times a-day. To have two ounces of wine. Diet, beef-tea; drink as above.

3d.—Yesterday morning had much improved, the pulse having fallen to 84, and the respiration to 22, whilst air entered the lung much more freely. To-day the pulse is 68; resp. 20; skin moist; expectoration copious, and fluid. Yesterday, three doses of antimony, with tinct. opii. m. x., in each, were administered in the course of the day. The fomentations also were continued. The antimony and opium to be continued as on yesterday, the fomentations to be omitted. Beef-tea diet, with three ounces of wine.

5th.—Has steadily improved since last report. Was yesterday ordered bicarb. potassæ, gr. xv., in infus. senegæ, ℥ij., three times a-day. Antimony and fomentations were omitted. To-day there is very little cough, and no expectoration. Pulse 60; resp. 22; air entering the whole of the lung; slight coarse crepitation at the base. Continue the alkali. Low diet.

7th.—Pulse 56; resp. 20; air entering the whole of the lung; occasional large crepitation at the base, chiefly with expiration; no cough or expectoration. Continue the alkali and diet as above, two eggs, one pint milk.

10th.—Pulse 60; resp. quite natural; neither cough nor expectoration. Continue the alkali. Low diet, eggs and milk.

11th.—No sign of disease, but slightly debilitated. Omit the medicines. Low diet, eggs and milk.

14th.—Continues free from disease, and regains strength. Diet, roast chop from the 13th, with one pint beer.

21st.—Respiration natural. Feels strong and able to return to duty, to which he is now discharged. Diet with beer as above.

Case IV.—Private Thomas Williams, 47th Regiment, age 28.—*December 3d*, 1864.—Was attacked with rigor on the 30th November, when on guard, and began to suffer from cough on the next day, when he was admitted into hospital with obscure signs of pneumonia. He was ordered a purge, with tartar emetic every third hour, and the usual turpentine fomentations. Yesterday the pulse was 100; respiration 24; and there was evidence of well-marked pneumonia at the base of the right lung; but, as the pulse was rather deficient in strength, it was hoped that antimony and fomentations would be sufficient to control the disease. To day, however, there is great heat of skin, troublesome cough, and rust-coloured and rather tenacious sputa. Pulse 108, and rather sharp; respiration 32; well-marked pneumonia, in the first stage, at the base of the right lung. To be bled to ℥viij. Ant. tart. gr. ¼, every fourth hour; turpentine fomentations three times a-day. Diet, spoon, with lemonade.

4th.—Became faint when ℥viij. of blood had flowed, but is considerably better. To have ant. tart. gr. ¼, with tinct. opii, m. x., three times a-day. Diet as above.

5th.—Pulse 96; resp. 22; expectoration very copious and fluid, but less tinged than on yesterday; air entering the whole of the lung, with coarse crepitation at the base. Continue the antimony and opium as on yesterday. Omit the fomentations. Beef-tea diet, with lemonade.

6th.—Pulse 84; resp. 24; air entering the lung freely; crepitation less marked than on yesterday; expectoration fluid and frothy, very little tinged with blood. To have bicarbonate of potash in infusion of senega, three times a-day. The chest to be twice fomented. Diet, beef-tea and lemonade.

7th.—Pulse 76; resp. 18; very slight cough; expectoration fluid and untinged; large crepitation at the base of the lung. Continue the bicarbonate of potash. Omit the stupes. Diet, beef-tea with lemonade.

9th.—Pulse 72; resp. 22; very little cough; expectoration fluid, mucous, and untinged; air freely entering the whole of the lung; still slight crepitation at the base. Continue the potash. Low diet with lemonade.

10th.—Pulse 76; resp. 22; expectoration copious, and untinged; large crepitation still audible at the base of the lung. Potash continued. Low diet, with two eggs, and one pint of milk.

12th.—Pulse 68; resp. 20; air entering the lung freely; still slight crepitation at the base; expectoration fluid and untinged. Continue the potash. Diet as above.

16th.—Left his bed yesterday for the first time. Free from cough; no expectoration; resp. natural. Omit the potash. Diet, roast chop with a pint of beer.

22d.—Rapidly regaining strength; no cough or expectoration; states that he is quite well. Diet and beer as above.

26th.—States that he feels quite strong, but looks rather delicate; no cough; respiration natural. Diet, etc., as above.

27th.—Continues well, and is anxious to return to duty. Discharged.

CASE V.—Private George Arnold, 47th Regiment, age 23.—*December 8th*, 1864.—This man, who is employed as an officer's servant, had an attack of pneumonia of the right lung in August 1863. He was then treated by bloodletting, and tartar emetic, and was under treatment for 27 days. On the night of the 6th inst., during severe weather, he was sent a message for his master. In the course of the same night he had a rigor, and began to suffer from cough almost immediately afterwards. He was admitted into hospital on the following morning, with signs of incipient pneumonia at the base of the right lung. Was ordered a purge, and to take ant. tart. gr. ¼, every third hour. Turpentine fomentations were also applied three times a-day. In the evening a vein was opened, but as syncope threatened, no blood was drawn. This morning the pulse is 112, respiration 40. Did not begin to expectorate until this morning, and what he brings up is tenacious, and very much tinged. There is crepitation over the right lung, as high as the level of the third rib, both before and behind. Has been bled to ℥xij., with much relief to the breathing. To have ant. tart. gr. ¼, with tinct. opii, m. x., every third hour. Turpentine fomentations three times a-day. Diet, spoon, with lemonade.

9th.—Pulse 100; resp. 40; air entering the whole of the lung; small crepitation, mixed with sonorous rales; expectoration copious, very much tinged, and rather tenacious. Very little uneasiness in the chest; bowels rather relaxed; less thirst than yesterday. Continue antimony every third hour, with tinct. opii, m. x., in the two first doses. Continue the fomentations. Spoon diet and lemonade.

10th.—Pulse 92; resp. 32; air freely entering the whole lung; coarse crepitation only at the base; expectoration more fluid, and very little tinged.

Continue the antimony as above, but without opium. Beef-tea diet, with lemonade.

11th.—Pulse 76; resp. 28; air entering the whole lung freely; prolonged expiration, with crepitation at the base; expectoration copious, fluid, and slightly tinged. Continue the antimony and fomentations. Beef-tea diet and lemonade.

12th.—Pulse 76; resp. 28; air entering the lung freely; very slight crepitation; expectoration very little tinged. Treatment and diet continued as above.

13th.—Pulse 72; resp. 24; air entering the lung freely, accompanied by loud sonorous rales; no crepitation; expectoration copious and untinged. To have bicarbonate of potash in infusion of senega three times a-day. Low diet, two eggs, one pint milk.

14th.—Pulse 68; resp. 20; expectoration small in quantity and untinged; very little cough; respiration almost natural, but sound of expiration still prolonged, and a little rough in tone. Potash and diet as above.

16th.—No cough; progressing favourably. Treatment as above. Diet, roast chop.

19th.—Air freely entering the lung; occasional sonorous rales; no crepitation; neither cough nor expectoration. Diet and remedies as above.

21st.—Air entering the lung freely; no crepitation; neither cough nor expectoration. Omit remedies Diet as above, with one pint beer daily from 20th.

22d.—Rapidly regaining strength; no cough or expectoration; respiration natural. Diet and beer as above.

24th.—Respiration natural; feels strong and able to return to duty, to which he is discharged.

CASE VI.—Private John Ryan, 47th Regiment, age 21.—*December 12th*, 1864.—Was discharged from hospital on the 30th of last month, after a very mild attack of scarlatina. He had in the interval fully regained his previous strength. At 9 A.M. yesterday he was attacked with rigor and felt cold during the whole day, and until late in the evening, when he became hot and feverish. About 3 A.M. of to-day he began to suffer from pain in the right side of the chest, attended with slight cough. The pulse is now 100; resp. 40; temperature in the axilla 105°. There is slight crepitation audible with the sound of inspiration at the base of the lung; prolonged and roughened sound of expiration at the same point; no expectoration; ant. tart. gr. ¼, every third hour; turpentine fomentations three times a-day. Diet, spoon, with lemonade.

13th.—Pulse 108; resp. 28; temperature barely 104°; air freely entering the whole of the lung, no crepitation, but slight roughness with the sound of expiration at the base. Treatment and diet as above.

14th.—Pulse 100, rather sharp; resp. 34; air entering the lung, with tolerable freedom down to the base; crepitation audible about half-way up the lung, but not well marked; cough became more troublesome in the course of the night; considerable distress of breathing, with pain below the right axilla; expectoration not very copious, rust-coloured, and tenacious; considerable thirst; has been, this morning, bled to ℥x. To have ant. tart., gr. ¼, with tr. opii, m.x., every third hour; turpentine fomentations as above. Diet, spoon, with lemonade.

15th.—Pulse 112; resp. 28; expectoration tenacious, rather scanty, and considerably tinged; air entering the lung with tolerable freedom; crepitation well marked towards the base; tongue furred and slightly dry at the tip; much thirst, and cough very distressing. The antimony to be continued as on yesterday, but without opium; turpentine fomentations as before. Diet, beef-tea; lemonade, with ℥ss. wine every second hour.

16th.—Pulse 96; resp. 28; cough much less troublesome; expectoration more copious and fluid, but still rust-coloured; air entering the whole of the lung with tolerable freedom, and attended with large crepitation towards the base; tongue moist; less thirst. Treatment and diet as on yesterday.

17th.—Pulse 92; resp. 36; tongue rather furred, but moist; complains of sharp pain at the lower part of the right side; air, however, entering the lung freely with large crepitation; expectoration more copious, fluid, and less tinged than on yesterday; to have a blister, six by four inches, applied to the right side. To take potassæ bicarb., gr. xv., three times a-day; the antimony to be omitted, but the fomentations continued until the blister is applied. Three ounces of wine in half-ounce doses, every two hours. Diet as above.

18th.—Pulse 88; resp. 24; the blister has acted well, and he is now quite free from pain; expectoration not very copious, but fluid and untinged with blood. Treatment and diet as above.

19th.—Pulse 80; resp. 24; much less cough; expectoration fluid and untinged; tongue less furred and quite moist. Treatment as above. Diet, beef-tea, with two eggs, and one pint of milk.

20th.—Pulse 76; resp. 24. Treatment as above. Diet, low, with eggs and milk.

21st.—Pulse 84; resp. 24; air entering the lung freely; slight roughness with the sound of expiration, but no crepitation; very little cough; slight mucous expectoration; no tinge of blood. Continue the potash. Diet as above.

24th.—Pulse and respiration natural; no cough or expectoration for the last forty-eight hours. Roast-chop diet; one pint of beer.

30th.—Quite well for more than a week past. Discharged to duty.

CASE VII.—Lance-sergeant Robinson, 47th Regiment, age 37.—*January 5th*, 1865.—Was attacked with rigor in the forenoon of the 3d instant, and cough soon followed. He had suffered from cold for a few days previously; admitted into hospital yesterday morning, but did not then suffer from well-marked signs of pneumonia; to-day there is crepitation over the right lung, as high as the angle of the scapula, which is most marked with the sound of expiration; he states that he had a similar attack last year when at Gananoque, drilling volunteers, and was there treated by a civil practitioner, who bled him to about one pound; states also, that he quite regained his previous strength, and never felt better than a short time previous to his present attack; the expectoration is now rust-coloured, but fluid, and brought up with tolerable freedom; pulse 84; resp. 30; temperature 103°. Since the pulse, etc., was recorded this morning, he has been bled to ℥xij.; to take ant. tart., gr. ¼, every third hour; turpentine fomentations three times a-day. Diet, spoon, with lemonade.

6th.—Pulse 76; resp. 20; temperature 98°; air freely entering the lung, down to the base; crepitation still distinct; expectoration less tinged, but rather tenacious; blood drawn yesterday shows the "buffy coat;" bowels constipated. Continue the antimony every third hour, with ʒi. of sulph. magnesiæ in each dose; the fomentations to be continued; diet and drink as above.

7th.—Pulse 76; resp. 20; temperature 100°; air entering the lung freely, with coarse crepitation; signs of bronchitis heard under the axilla; cough short and troublesome; expectoration untinged and fluid, but less in quantity. Antimony, gr. ¼, every second hour, until vomiting is produced,—afterwards every third hour; to have tinct. camph. co., ʒi. with the first dose of antimony; fomentations to be continued. Diet, beef-tea; drink as above.

8th.—Pulse 96; resp. 32; temperature 103°; air entering the lung freely down to the base; coarse crepitation mixed with sonorous rales; sharp pain in the side a little below the breast; expectoration rather scanty, very tenacious, and of a slightly yellow tinge; tongue furred, but moist. To have a blister applied to the right side; antimony, gr. ¼, and tr. opii, m. v., every third hour. Diet, spoon, with lemonade; wine ℥ss., every second hour.

9th.—Pulse 88; resp. 22; temperature 102°; air entering the lung, with coarse crepitation, and sonorous rales, audible chiefly on forced respiration, and then, most distinctly with the sound of expiration; the blister has acted well, and there is less pain; cough less troublesome; expectoration more copious and brought up with less difficulty, but still very tenacious, and tinged of a yellow colour as if mixed with bile. Antimony to be continued every third hour, and potassæ bicarb., gr. xv., in water, ℥iij., also every third hour, but between the doses of antimony. Diet, wine and lemonade as above.

10th.—Pulse 76; resp. 20; temperature 98°; was attacked last evening with a "stitch" a little below the nipple of the right side; a small blister was applied, and the pain is now much less severe; there is still some complaint of pain under the spot over which the first blister was applied; the cough is much less troublesome; the expectoration also is brought up with much more freedom, it is still tinged of a yellow colour and rather tenacious; quantity rather smaller than on yesterday; air entering freely down to the base of the lung; large crepitation. Antimony and bicarbonate of potash three times a-day. Diet, wine, and lemonade as above.

11th.—Pulse 72; resp. 20; temperature natural; no pain; much less cough; expectoration more fluid and much less tinged. Omit the antimony; continue the potash. Diet and wine as above.

12th.—Pulse and respiration natural; much less cough; expectoration fluid and untinged; bowels constipated; to have pulv. jalapæ comp. ʒi.; continue the potash. Diet, low; wine continued.

18th.—No cough or pain; air entering the lung freely, but still slight crepitations at the fore part of the base, audible chiefly with expiration. Diet, roast chop, with one pint beer, and two eggs, from the 17th.

22d.—Respiration natural; feels well and able to return to duty, to which he is now discharged.

CASE VIII.—Private Patrick Brady, 47th Regiment, age 22.—*January 23d*, 1865.—Went to bed well on the 21st inst., but, about 5 o'clock on the following morning, he was attacked with rigor; about two hours afterwards cough commenced, and about 1 P.M. he began to expectorate mucus tinged with blood; about 2 P.M. of the same day he was admitted into hospital; his pulse was then 96; respiration 24; at 5 P.M. he was bled to ℥xiv., and ordered antimony every third hour, with turpentine fomentations to the chest. This morning the pulse is 104; respiration 24; temperature 100°; the pulse is soft, the skin moist, and the cough less severe; air enters the whole of the lung, but the sounds of respiration are somewhat obscured; there is small crepitation at the base behind; coarser opposite the angle of the scapula; expectoration copious, frothy, and tinged a bright scarlet; to have ant. tart., gr. ¼, with sulph. magnesiæ, ℥i., every third hour; turpentine fomentations three times a-day. Diet, spoon, with lemonade.

24th.—Pulse 72; resp. 20; temperature 101°; air entering the lung freely down to the base; small crepitation audible there chiefly with the sound of expiration, which is in duration as two to one compared with that of inspiration; large crepitation audible behind, on a level with the nipple; expectoration fluid, in considerable quantity, and thoroughly tinged with blood of a bright red colour; cough less troublesome; tongue loaded, but moist; no thirst; slight pain near the right nipple. Ant. tart., gr. ¼, three times a-day; omit the fomentations. Diet, spoon, with lemonade.

25th.—Pulse 64; resp. 32; temperature 100°; air entering the lung freely; still slight crepitation; expectoration more fluid and very much less tinged; cough very troublesome last evening, but now much less so since the application of a mustard-plaster. Continue the antimony as above. Diet, beef-tea, with lemonade.

27th.—Air entering the lung freely; large crepitation near the base; respiration natural as to frequency; expectoration fluid, frothy, and very little tinged. Omit the antimony; to take bicarb. potassæ, gr. xv., three times a-day. Diet, beef-tea, with wine ℥ij.

29th.—Pulse and respiration natural; air entering the lung; very little crepitation; expectoration fluid, frothy, and not at all tinged. Continue potassæ bicarb. as above. Diet, low, with two ounces wine.

February 13th.—By the 3d instant, all the symptoms had abated; since that date he has been gradually regaining strength; now well in every respect; discharged to duty. Diet, roast chop, with one pint of beer daily from the 3d to the present date.

CASE IX.—Private Francis Nash, 47th Regiment, aged 30.—*February 5th*, 1865.—A weakly man of rather intemperate habits; was under treatment in hospital for 44 days, in July and August 1864, at London, Canada West, for an asthenic attack of pneumonia of the right lung, complicated with ague and diarrhœa, which he contracted when on outpost duty. He was confined in the guard-room for drunkenness about 2 P.M. of the 2d instant; at 4 o'clock on the following morning he had a rigor, and felt sick and ill; admitted into hospital the same morning, suffering, apparently, from the effects of drink; in the course of the same night he began to cough and to suffer from pain in the right side of the chest, and on the 4th he began to expectorate, bringing up mucus slightly tinged with blood. To-day there is moderate cough, and the expectoration is copious and tolerably fluid, but slightly tinged with blood; pulse 96; resp. 28; temperature 98°. To have ant. tart., gr. ¼, three times a-day; turpentine fomentations every fourth hour. Diet, beef-tea, with lemonade.

8th.—Pulse 104, soft, but rather weak; resp. 36; expectoration a good deal tinged, and in considerable quantity, but very tenacious; tongue furred and rather inclined to be dry; a blister was applied to the side yesterday; it has acted well; he had bicarb. potassæ, gr. xv., three times, and no antimony, also two ounces of wine. The potash to be continued to-day as on yesterday, but gr. ¼ ant. tart., to be given with each dose. Diet, beef-tea, with two ounces wine.

9th.—Pulse 100; resp. 32; temperature 103°; tongue furred and slightly dry; face flushed; air entering the lung freely, but small crepitation very distinctly marked towards the base; expectoration moderate in quantity, very tenacious, and brought up with difficulty, tinged throughout with blood; cough troublesome, no pain. Antimony and potash continued as above. Beef-tea diet; two ounces wine, one pint milk.

10th.—Pulse 76; resp. 32; temperature 99°; expectoration more fluid, brought up with less difficulty, and not so much tinged; tongue less furred, but still rather dry at the tip; the cough continues troublesome; less thirst. Continue the remedies; diet, wine, etc., as on yesterday.

11th.—Pulse 60; resp. 28; temperature natural; much less cough; expectoration fluid and easily brought up, but still a little tinged; tongue much less furred and quite moist. Antimony, gr. ¼, twice a-day; potash three times a-day. Diet, low, with three ounces wine, and one pint milk.

12th.—Pulse 60; resp. 25; tongue clean and moist; expectoration copious, fluid, and slightly tinged; air entering the lung freely down to the base, where there is large crepitation behind; relative length of the sounds of inspiration and expiration natural. Omit the antimony; continue the potash as above. Diet and extras as on yesterday.

15th.—Pulse 72; resp. 24; coarse crepitation still audible at the base of the lung; very little cough; muco-purulent expectoration in small quantity, slightly tinged with blood. Potash continued; also diet and extras as above.

21st.—No cough or expectoration; rapidly regaining strength; slight coarse crepitation still audible at the base of the lung, but air entering freely. Continue the potash as above. Diet, roast chop, with one pint beer.

March 3d.—With the exception of slight debility, there has been no sign of disease during the past week; now strong and able to return to duty, to which he is discharged. Diet, roast chop, with one pint beer daily since last report.

CASE X.—Private Philip Judge, 47th Regiment, age 21.—*April 7th*, 1865.—Was on guard on the 2d instant; continued in good health until the evening of the 5th, when he had a rigor, and suffered from sickness of stomach followed by pain in the right side of the chest, and slight cough; on the morning of the 6th, he began to expectorate rust-coloured mucus, and was then admitted with symptoms of incipient pneumonia in the right lung; he had a purge and was given two doses of tartar emetic which caused vomiting; turpentine fomentations were applied twice in the day. This morning the pulse is 88 and full; resp 20; temperature 102°; very little air entering the base of the right lung; small crepitation audible as high as, and on a level with, the nipple, both in front and behind; expectoration very much tinged, small in quantity and very tenacious. To be bled to ℥ x., and to take ant. tart., gr. ¼, every third hour. Turpentine fomentations three times a-day. Diet, spoon, with lemonade.

8th.—Pulse 92; resp. 20; temperature 102°; pulse soft; air entering down to the base of the lung, where there is large crepitation behind; expectoration more copious, less tenacious, moderately tinged, and muco-purulent in character. Ant. tart., three times a-day. Turpentine fomentations as on yesterday. Diet, beef-tea, with lemonade.

9th.—At 10 A.M., pulse 88; expectoration tolerably fluid, and very little tinged; cough less troublesome; still slight pain at the lower part of the chest; air entering the lung freely down to the base where there is large crepitation with the sound of respiration. Antimony three times a-day; potassæ bicarb., gr. xv., three times a-day. Turpentine fomentations as on yesterday. Diet, beef-tea; omit the lemonade. At 5 P.M., pulse 84; resp. 24; temperature 101°.

10th.—Pulse 80; resp. 24; temperature 98°; less cough; expectoration very little tinged; large crepitation still audible at the base of the lung; duration of the sounds of expiration and inspiration nearly equal; skin moist; tongue very little furred; no thirst. Continue ant. tart. and potassæ bicarb. as on yesterday. Omit the fomentations. Diet, beef-tea.

11th.—Pulse 80; resp. 22; temperature 100°; expectoration considerably more tinged, and less copious; air entering the lung, but not quite so freely as on yesterday; sonorous rales mixed up with large crepitation; considerable pain of the side on coughing or full inspiration. A large blister to be applied to the side; antimony and potash as on yesterday. Diet, beef-tea.

12th.—Pulse 76; resp. 28; temperature 100°; the blister acted well, and the pain has quite ceased; very little cough; expectoration fluid and much less tinged; skin moist; tongue slightly furred, but moist. Continue the remedies and diet as on yesterday.

13th.—Continues improving. Omit the antimony, but continue the potash. To have low diet to-morrow.

15th.—Free from pain; no cough; a little untinged expectoration yesterday; none to-day. Continue the potash. Diet, low.

19th.—Rapidly convalescing; no pain or cough; respiration at the base of the lung nearly natural; sound of expiration still slightly prolonged. Omit remedies. Roast-chop diet to-morrow.

30th.—Has progressed favourably since last report; now quite strong and able to return to duty, to which he is discharged.

The details of the ten cases above recorded will, I trust, enable the reader to form a very fair estimate of the total series; but my original intention was to have made such a selection from the whole as would have included characteristic examples of the cases of each year of the period embraced in this record. Loss of health in my family, however, made it suddenly necessary that I should at once return to England, and left no time for making the necessary extracts from the public records. Fortunately, however, I had, towards the end of 1864, begun a system of making duplicate notes of the records of cases of pneumonia which came under my care, and, in that way, I have now been enabled to give in detail information which I hope may be found sufficient for the end in view.

The general deductions given at the beginning of this paper, are based on facts which were tabulated at the time each case occurred.

The following are the records of the three cases which terminated fatally; the two first in detail; the last in a condensed form.

FATAL CASE, No. I.—Private Francis M'Ardle, Army Hospital Corps, age 25; service, 7 years; station, Montreal, Canada East; time on the station, 8 months. —*March* 12*th*, 1862.—An Irishman; by trade a labourer; a stoutly-made man; was formerly in the 47th Regiment; and has done duty in the hospital of the corps for the last 3 years; was attacked, on the 8th instant, with rigor, which was followed, on the 10th, by pain in the right side of the chest, accompanied by cough and expectoration of rust-coloured sputa. When admitted into hospital, on the latter date, there was obscure crepitation at the base of the right lung. The pulse was 100; the breathing much hurried; and there was great thirst; he was cupped to about ℥ iv., and was given ant. tart., gr. ¼, with hydrarg. cum creta. gr. ¼, every third hour. Yesterday he was a good deal better, but the pulse was still high and the breathing hurried; the expectoration was copious, and of the same character as on the previous day; a blister was applied at bedtime, and the antimony continued as above. To-day he is free from pain; the breathing is nearly natural, and the pulse 96; the blister has acted well; the bowels are constipated. To have pulv. jalapæ co., ʒi., calomel, gr. ij; the antimony to be continued as before, after the purge has acted. Diet, spoon, with two pints lemonade.

14*th*.—There was an increase of fever yesterday morning, and the tongue became dry, whilst expectoration was more difficult, and the pulse rose to 108. He had ant. tart., gr. ¼, every hour up to about 3 P.M., when he became much under the influence of the drug, and had an attack of syncope after having been to the close-stool, his bowels having been freely acted upon by a purgative enema. Towards evening, he seemed a good deal better, his pulse having fallen in frequency, whilst, however, it lost strength from the action of the antimony: his tongue also had become moist. The antimony was discontinued, and ℥ij. of brandy in ℥ss. doses were given in water, in the course of the evening. He passed a restless night, and now complains of slight pain in the left side, where there is evidence of incipient pneumonia at the base of the lung. Pulse 108; resp. 28; tongue dry at the tip; sputa rusty and rather scanty; great thirst. A blister to be applied to the left side of the chest. To take pulv. Doveri, gr. viij., hyd. cum creta, gr. i., ant. tart. gr. ¼, three times a-day. Diet, spoon, with lemonade, and ℥ ij. of brandy.

15*th*.—The blister has acted well, and he is quite free from pain. He suffers less from cough, and his breathing is much more quiet. He is now perspiring profusely, and seems on the whole considerably better, although his pulse is feeble, whilst it is at the same time less frequent than it was yesterday. The tongue is less furred, and is now moist. The strangury has ceased. To take the following three times a-day:—℞ Ammoniæ sesquicarb., gr. v.; tinct. camph. co., ʒi.; spt. æth. nit., m. xx.; aquæ, ℥i.—M. Omit the powders. Diet, beef-tea; two pints lemonade; two ounces brandy.

16*th*.—There is this morning some distress of breathing, with pain across the chest. The pulse is 104, and inclined to be weak; and the tongue is slightly dry at the tip. There is some increase of dulness on percussion at the lower part of the left side of the chest, as well as an absence of the sound of respiration at the base of the lung. There is large crepitation, mixed with sonorous rales, at the lower part of the right side. The bowels are constipated. A purgative enema to be administered, and a mustard-plaster applied to the front of the chest. The mixture as above ordered, but omitting the tinct.

camph. co., to be given every third hour. The diet, lemonade and brandy, as above. Towards evening, distress of breathing came on attended with suppression of the expectoration. Pulse 120; face flushed. The brandy was omitted and the mixture discontinued.

17th.—After the stimulating treatment had been discontinued, last evening his condition improved, and he passed on the whole a tolerable night. There is less difficulty of breathing, and the pulse has fallen to 100. The tongue is moist, and the face less flushed. There is evidence of induration at the base of the left lung. The right is doing well. The following to be given every second hour:—℞ Vin. ipecac., ʒss.; potassæ bicarb., gr. xv.; infus. senegæ, ℥i.—M. Diet, beef-tea, with two pints lemonade.

18th.—Is considerably better this morning. The pulse has fallen to 80, and is of moderate strength. There is no distress of breathing, and the cough is less troublesome, whilst expectoration is more free and less tinged. The tongue is moist, and but little furred. Percussion gives a clear sound over the base of the left lung, and large crepitation is audible there. Continue the mixture. The following to be given three times a-day:—℞ Pulv. Doveri, gr. v.; hydrarg. cum creta, gr. ij.—M. Diet, beef-tea, with lemonade.

Vespere.—Has dozed a good deal in the course of the day. States that his gums are now tender. The tongue is slightly dry at the tip. Omit the powders. To have two ounces of brandy, at four times, in water, in the course of the evening.

19th.—About 2 A.M. his breathing became much distressed, and since then insensibility has gradually come on. His breathing is now very much hurried, and accompanied by occasional long convulsive inspirations. His countenance is dusky and his skin congested. His pulse is extremely feeble, and there has been an involuntary discharge of urine. The hair to be removed, a blister to be applied to the nape of the neck, and a mustard plaster to each calf. To have occasionally a little brandy and water, if he can swallow.

20th.—Remains in much the same condition as that reported yesterday. His countenance is dusky, and he can be only partially roused. His pulse is very frequent, extremely feeble, and somewhat intermittent. His teeth are covered with sordes. The blister has acted well, but he has not become more sensible. The discharges are passed in bed. A turpentine enema to be administered, and to take what stimulants and nourishment he can swallow.

21st.—From yesterday morning the powers of life gradually failed, and he expired in the way of coma at half-past eight the same evening.

Post-mortem examination fourteen hours after death.—There were tolerably strong pleuritic adhesions over the greater part of both lungs, but in a more marked degree on the right side; and in freeing the base and posterior part of the right lung, the tissue of it gave way under the hand. There was intense congestion of the base and lower and posterior half of the right lung, together with the condition of red hepatization at different spots in the same positions, but most marked in degree towards the base. There was intense congestion, but in a less degree at the base of the left lung, which was, however, free from hepatization. There was no tubercular deposit or other disease of either lung. There was slight adhesion of the pericardium to the heart, near its apex, and the disease seemed of recent date. The quantity or character of the pericardial fluid could not be ascertained, as it escaped through a cut accidentally made in removing the thoracic contents. The liver was much congested, and somewhat softened at the posterior part of the right lobe. The kidneys were also congested, and there was a slight trace of the incipient deposit of Bright's disease. There was no other apparent disease of the abdominal contents.

This case was the first which came under my care during my service in Canada, and I fear that I cannot look back with satisfaction to the course I adopted in treating it. The lesson, however, which its progress and result taught me was a valuable one, and I believe that the details I have given respecting it will prove to be not without interest to others.

Fatal Case, No. II.—Lance-corporal William Dickson, 47th Regiment; age 21; service $2\frac{11}{12}$ years; station, Kingston, Canada West; time in Canada, $2\frac{1}{12}$ years. *August 13th*, 1863.—This man was under treatment, at Montreal, for remittent fever, from the 24th September to the 20th October 1862. He is now admitted into hospital on account of general debility and pains in the back and limbs. His tongue is loaded, and his pulse slightly accelerated. There is no headache, but he feels heavy, and is much inclined to sleep. His appetite is bad, and he suffers from thirst. His bowels are tolerably regular He had to-day a slight rigor followed by sweating. To have a common purgative dose with 5 grains of quinine in it. Diet, spoon, with two pints lemonade.

14th.—Passed a restless night, coughing much, and expectorates tenacious mucus, slightly tinged with blood; pulse 108; much thirst; tongue loaded. There are now undoubted signs of the first stage of pneumonia at the base of the right lung. Was well purged yesterday. To have turpentine fomentations to the side, and to take ant. tart., gr. ¼, every second hour. Diet and lemonade as on yesterday.

19th.—Has had well-marked pneumonia, which is now waning; crepitation still distinct; sputa less bloody and tenacious; pulse 95, rather weak. To have the following three times a-day:—℞ Ant. tart., gr. ¼; tinct. camph. co., ʒss. Liq. Ammoniæ acet. ℥ss. Diet, beef-tea; two pints lemonade; two pints milk.

[Here my charge of the case ceased, and the following entries were made by the medical officer who relieved me.]

21st.—Respiration easy; pulse quiet and regular; slight cough. To have cough-mixture. Diet continued.

22d.—Much better; dislikes the lemonade. Diet continued; omit lemonade.

24th.—Not so well to-day. Breathing more difficult; dulness over the lower lobe of the right lung; general aspect unfavourable. To have ant. tart., gr. ¼; calomel, gr. j.; every second hour. Diet, low; two pints milk, one egg.

25th.—Seems a little better, but his respiration is still hurried. Continue treatment. Diet, beef-tea; one pint beer, four ounces wine, one egg, two pints milk.

26th.—Was very weak last night, but is rather better to-day. Continue powders every third hour. Diet, beef-tea; two ounces brandy, four ounces wine, two pints milk, one egg, one tin essence of beef.

27th.—Much better, but still very weak. Diet and extras as on yesterday.

28th.—Same as yesterday. Mouth not affected by the mercury. Continue powders every third hour. Diet and extras continued as above.

29th.—Not so well as on last night. Had some delirium during the night. Very thirsty. Continue powders. Diet, etc., as above.

31st.—Improving slowly. Much difficulty of respiration. Mouth not yet touched by the mercury. Diet, beef-tea; one egg, two pints milk, eight ounces wine, one tin essence of beef.

September 2d.—Not so well. Has had since diarrhœa. Checked. Omit the powders. Diet, etc., continued as above.

3d.—Looks very ill still, and has much dyspnœa. Very weak. Cough-mixture. Diet, etc., continued as above.

4th.—Rather better than on yesterday. Diet, etc., continued as above.

6th.—Worse. Dyspnœa increased. Omit the mixture. ℞ Spt. ammoniæ aromat.; spt. ætheris comp., āā. m. x. Liniment—crotonis tiglii for chest. Diet, etc., continued as above.

7th.—Appears to be dying. Nil. Add two ounces brandy to the extras.

8th.—Died at 2 A.M. to-day.

Post-mortem appearances.—Chest: Right lung condensed, and nearly a quart of serum in the pleural cavity; a few slight recent adhesions, with soft lymph deposited on the surface. The whole lung in an advanced state of grey hepatization. At the apex softening had commenced, and the tissues had broken down, forming several small cavities. This was also the case at one or two points at the base of the lung. In other parts it was solidified throughout its structure. Left lung crepitant and healthy, without any tubercular deposit. Heart rather large, structure firm, valves healthy. Abdomen: Liver somewhat enlarged, structure healthy. Stomach, intestines, spleen, and kidneys normal.

Fatal Case, No. III.—Private John Allen, 47th Regiment; age 33; service, 15 years; station, Hamilton, Canada West; time in Canada, 3$\frac{4}{12}$ years. Had been for several years past employed about the officers' mess; and, when attacked by his last illness, was acting as scullery-man to that establishment. His employment exposed him to considerable alternations of temperature, and he has been generally considered to be a man who regularly consumed a large quantity of drink. Some ten years ago, when serving at Corfu, he had an attack of pneumonia, for which he was bled at the arm; and again, at Cork, in 1860, he had a similar attack, for which he was under treatment for twenty-three days. On the night of the 1st instant (November 1864), he had a rigor, and soon afterwards began to suffer from cough, and pain in the right side of the chest.

He was admitted into hospital on the morning of the 2d, and then his breathing was short, and he was unable to make a full inspiration without suffering from acute pain in the right side. Crepitation could not be detected, but there was obscurity of the respiratory murmur over the lower part of the right lung, with some prolongation of the expiratory sound. Towards evening the expectoration became rust-coloured. He was ordered a purge; turpentine fomentations were applied to the side, and tartar emetic afterwards administered in gr. ¼ doses every second hour, until nausea supervened, and then less frequently.

On the morning of the 3d, the pulse was 108 and rather full; respiration 28. The breathing was more free, sputa copious but not coloured, and of considerable tenacity. Crepitation could not be distinctly made out, although air could be heard to enter the lung.

On the morning of the 4th, the pulse had fallen to 96 in frequency, and was soft and of good strength; respiration 28; expectoration not so much tinged, but rather more copious and of less tenacity. No sound of air entering the back part of the base of the right lung, but small crepitation near the lower part in front. Large crepitation near the spine, and on a rather lower level than that of the angle of the scapula. The antimony to be continued every third hour unless it caused much nausea, and also the turpentine fomentations.

On the 5th, the pulse had fallen to 80, and was soft and of good strength; respiration 24; expectoration copious, less deeply tinged, and more fluid; crepitation very distinct over the base of the lung. The antimony was given three times a-day, and the turpentine fomentations were applied the same number of times. In the course of the night of the 5th, he suffered a relapse without any assignable cause; and, on the morning of the 6th, his breathing was found to be considerably distressed; respiration 40, whilst the pulse was 104; the sputa were more tinged, and much more tenacious. The antimony was given more frequently, and the fomentations were continued. In the evening it was found that he had been much nauseated, and the strength of the pulse reduced, but without abatement of the violence of the symptoms. The pulse was 108, and the respiration 44. There was great distress of breathing; and, in order to relieve that, he was bled from the arm to eight ounces, with slight relief. There was bronchial respiration over parts of the lung on a level with the angle of the scapula, whilst no air entered the lung below that position. The blood drawn became to all appearance a solid mass of the "buffy coat." There was no sign of disease in the left lung.

He passed a restless night, and on the morning of the 7th he was still much distressed. Respiration 44; pulse 120, but of good strength; slight lividity of the lips. The disease still seemed to be confined to the right lung, into which rather more air entered, with sound of coarse crepitation. The sputa were much tinged, less copious, and very tenacious. As it was evident that the greater part of the right lung had become incapable of action, and the left was embarrassed by the amount of blood thrown upon it, twelve ounces of blood were taken from the arm, and with the effect of affording very considerable relief. The countenance became clearer, there was much less distress of breathing, and in the course of the afternoon he had some sleep. In the evening he appeared considerably better. About 9 P.M. a blister was applied to the right side; he was then cheerful, and after that appeared to fall asleep, lying on the left side. About 10 P.M. it was observed that his breathing had become embarrassed; and when I saw him at 11 he was comatose, and could be only partially roused when stimulants were steadily administered, but without any permanent good effect; and he expired in the way of coma at 3 A.M. of the 8th.

Post-mortem examination fourteen hours after death.—Body muscular, and not emaciated. Marks of cupping and blistering of old standing on the right breast. The blister applied on the evening of the 7th had acted partially. Both lungs were firmly adherent to the walls of the chest, but especially the right, which could only be removed with great difficulty, owing to some recent and many old adhesions of great strength. The fore-part of the surface of the right lung was covered with a tough membrane of a yellow colour. With the exception of a small portion of the apex, and a part at the front of the base, the right lung was in the condition of red hepatization. It sank in water, and the larger divisions of the bronchi were filled with fibrinous casts, which retained their form on removal. The left lung was very much gorged with blood, its tubes loaded with mucus tinged with blood, but its tissue crepitated, and seemed throughout to be otherwise healthy. There was slight excentric hypertrophy of the left ventricle of the heart, but no valvular disease. The liver was considerably enlarged, and presented well-marked cirrhosis. The kidneys were of large size, and lobulated in form: one, which was laid open, presented incipient granular deposit of Bright's disease, and was much congested; the other was preserved whole.

The grand error committed in the management of this, the first serious case of the season, was the omission to bleed moderately at the outset of the disease. Had that course been adopted, there is every reason for believing that the favourable result which followed the employment of the remedy in question in so many cases of a similar nature would not have been wanting in this instance. Bloodletting was, however, subsequently made use of in this case, but at a stage of the disease when, hepatization having already taken place, there was no prospect that it could limit the advance of the complaint on the right side of the chest, although it might still, by relieving the engorged state of the left lung, assist in obviating the tendency to death by coma from mal-arterialization of the blood, which the condition of the lips and countenance showed to be imminent. I regret that the administration of wine was not commenced at this stage of the disease; but I must confess that I was not prepared for so early a fatal termination, although I became fully aware of the gravity of the attack from the time that the exacerbation of the symptoms and the sudden advance to hepatization took place. At the same time, however, whilst fully admitting the dangerous condition into which the case had fallen, I cannot altogether divest myself of the suspicion that the sudden supervention of coma was to a considerable extent determined by the accident of the man having been allowed to fall asleep whilst resting on his left side,—a position which could scarcely fail, in the existing state of the right lung, so to impede the action of the left as to cause a degree of embarrassment of the respiration which would be likely soon to lead to an early termination, such as actually happened.

From a careful study of the facts observed in connexion with the whole series of cases of pneumonia which came under my notice, I have been led to draw the following general conclusions:—

1st, As regards the exciting causes to which the disease could be clearly traced, one of the most frequent was exposure when on guard, and more especially when on sentry at night during severe weather,—conditions which were also, in all probability, materially aggravated by the overcrowding and want of ventilation which, as a general rule, existed in the guard-rooms. Another cause, of frequent occurrence, was confinement in the guard-room when under the influence of drink; as was also a want of sufficient care on the part of the men to avoid getting chilled, on their return to their barrack-rooms, when overheated and fatigued by a march into the country during the winter, or by a trying field-day at other seasons. Other cases, which could not so clearly be traced to their exciting cause, probably owed their origin to a certain amount of exposure during the depth of winter, which was inseparable from the daily routine of their barrack-life. In one instance, also, the disease came on after a severe fall causing slight concussion of the brain.

The time which elapsed between the date of exposure, where that could be clearly determined, and the occurrence of the rigor, was found to vary from a few hours to three or four days. In some of the cases recorded above will be found examples of the shorter periods, whilst the longer interval was well exemplified in the cases of four young and previously healthy men, who took part in a rather fatiguing field-day during warm weather in the month of June, and who were all attacked with pneumonia, which showed symptoms, mild in degree, but very characteristic of the disease. In one of the four, the complaint appeared on the third day, but in the other three it did not begin until the fourth. The man first attacked was under treatment for thirteen, two of the others each for eleven, and the fourth for ten days, the mildness of the weather having, in these, as in other instances, determined the degree of severity of the attack—it having been almost invariably found, that the rapidity with which an attack came on, bore a close ratio to the intensity of the exciting cause, which latter also determined the degree of violence of the attack.

2d, The earliest observed stethoscopic indication of the existence of the disease was a decided obscurity of the sounds of respiration, accompanied by some degree of alteration of the relative proportions of the inspiratory and expiratory murmurs—the latter having become prolonged, whilst the former was shortened—less so, however, with the first indications of a change from health, but increasing, as the period of the setting in of crepitation approached, until but little of the inspiratory sound could be distinguished, and that of expiration became not only prolonged as to duration, but exaggerated in tone, so as to bear a close resemblance to bronchial breathing, of which it was probably the first degree. This did not, however, depend on actual consolidation, but was owing in all probability to that amount of increased density of structure which was the result of great engorgement of the vascular tissues, and, perhaps, in some measure also to fluid effusion into air-cells as well. In the earlier stage of the obscured respiratory sound, its tone was somewhat altered, by having become less soft in character; but it was not until the stage of crepitation in its first degree approached that the expiratory part of it became exaggerated, to be afterwards, in many cases, for a few hours lost altogether during ordinary respiration, although evidence that air entered the diseased portion of the lung could still be heard during forced respiration. This obscurity of respiration was first noticed by me in 1862, during my examinations of the earlier cases of pneumonia which came under my care; and, in the whole course of my subsequent experience, although often not recorded, this condition was never found wanting when carefully searched for. The alteration of the relative proportions of the respiratory sounds, which attended this state of the breathing, showed that it depended on commencing engorgement of the lung tissues affected in pneumonia; that condition progressing in intensity, as indicated by the change of character of the expiratory sound until the acme of engorgement—without, however, actual consolidation—was reached, as shown by the fact, that but little air then entered the diseased portion of lung during ordinary respiration. To this highest degree of engorgement, in acute cases treated at the outset by bloodletting, and in mild or asthenic ones where the progress of the disease was favourable to recovery without hepatization, relief was, however, soon afforded, by the setting in of secretion as manifested by crepitation, small at first, but gradually becoming of a less fine character, as the lessening engorgement allowed the smaller ramifications of the bronchial tubes to regain more of their natural capacity.

The stage of engorgement in its various degrees generally lasted to near the end of the first or beginning of the second day of the disease. Then, with or without a short interval of absence of respiratory sound, small crepitation set in; and, in sthenic cases early bled, and where everything was favourable, lasted probably for twenty-four hours more, when large crepitation could be heard over part of the lung. This generally happened towards the end of the third, or in the course of the fourth day of the disease. Judging by the rate of the pulse, taken in conjunction with recorded observations of the temperature of the body, the period at which the accompanying fever attained its greatest height, corresponded with the acme of engorgement and the duration of small crepitation. It gradually abated, however, on the occurrence of large crepitation in such sthenic cases as had been efficiently treated, and the disease then steadily abated without hepatization having occurred at all. For a few days, however, after the cough and expectoration had entirely ceased, large crepitation could be heard at the base of the lung, chiefly during expiration. The evidence of disease, which could be last distinguished, immediately before the return of natural respiration, was some prolongation and roughening of the sound of expiration.

3d, Facts which have come under my own observation, and which are to my mind conclusive, have forced upon me the conviction, that the assertion which has been so confidently maintained to the effect,—*1st*, That a pneumonia cannot exist and recover without having passed through all its stages, short of gangrene, but up to that of suppuration or gray hepatization; and, *2d*, That it implies ignorance of the true pathology of the disease, either to attempt to interfere with the progress of that course, or to believe that bloodletting can act in any other way than to impede what is looked upon as the natural process of recovery;—is true only as regards certain classes of cases, and is not borne out by facts in respect of the disease in general. All my experience of pneumonia leads me to conclude, that the natural course of a sthenic attack of that disease, induced by an exciting cause acting with a high degree of intensity, and treated by bloodletting at the outset of the disease, is in strict accordance with the succession of changes which I have already described in treating of the stethoscopic signs and progress of the complaint.

A perusal of the cases of recovery given above will show the grounds on which the observations I have just made are based, and will explain the characters which I believe to be usual in that acute and sthenic form of attack which should, in my opinion, be considered typical of pneumonia. When, however, an attack originally such as that above referred to is allowed to run its course, without adequate treatment, its tendency is to a fatal termination, which will in all probability happen before more than perhaps a small portion of only one lung has reached the stage of red hepatization. Fatal case No. 1, recorded above, is an example of the disease terminating in this way. In cases, however, which are asthenic from the beginning, or which have been induced by exciting causes acting with moderate intensity, as is generally the case in the summer and autumn months in Canada, and during most seasons of the year in the more temperate climate of Great Britain, as well as in those attacks in the treatment of which it may not have been considered necessary to employ bloodletting, recovery may in a large proportion of instances be satisfactory, provided they have been early brought under intelligent medical treatment, and that, too, without hepatization ever having occurred. Case No. 9, given above, is a fair example of an asthenic pneumonia occurring in a weakly man, and running its course in the manner which has just been indicated. A proportion of such cases, however, will, without assignable cause, or the existence of any very apparent difference in character from other attacks to all appearance identical with them, run on to hepatization—that stage coming on either gradually or by a sudden exacerbation of symptoms after apparent temporary amendment—and require a lengthened period of treatment for their cure. Cases of this description may also terminate fatally, but then, in comparison with what is observed in sthenic attacks having a similar result, there will be a very marked difference in the rapidity with which they will have run their course, which may not close in death until after the lapse of several weeks. In cases of this description, examination of the body after death will disclose a large portion of lung in the condition of grey hepatization, which may even have gone on to the formation of abscess, as happened in the second fatal case recorded above.

A considerable number of cases of a nature similar to those last described, with the exception that they all recovered, came under my notice in the season of 1863, when from a local cause the complaint was less sthenic in form, and when also, for a reason already given, bloodletting was less frequently had recourse to in its treatment. Of this nature, also, I believe that the majority of the cases of pneumonia treated in civil hospitals in this country partake; and from all I can learn on that subject, I am induced to suspect that a very considerable proportion of those cases are not brought under medical treatment until the stage of hepatization has probably set in.

4th, As will have been inferred from what has already been mentioned in the course of this paper, I have arrived at the conclusion, founded on facts, which I do not think can well be misinterpreted, that contrary to what has been asserted on this point also, variations in the nature and intensity of the exciting cause, as well as the influence of changes in climate, in atmospheric conditions, and in locality, affect, in a marked degree, the form or type in which pneumonia may occur. This was in no way more clearly made apparent than by the modifications of the disease, caused in the course of a single year in Canada, by the variations of a temperature ranging from —35° in the open air to 100° in the shade: the extreme cold of winter producing attacks of pneumonia which were severe in form and rapid in accession in direct proportion to the severity of the exciting cause; whilst, on the other hand, the milder temperature of summer and autumn led to attacks which were slow in accession and correspondingly slight in degree.

5th, My experience of the effects of bloodletting convinced me that its employment at the outset of pneumonia in its sthenic form was attended with most beneficial results, not only in shortening the duration of the disease, and rendering convalescence satisfactory, but also in giving an amount of certainty and uniformity to the results of treatment which could not be attained by the employment of any other combination of remedies. As to its power in "cutting short" the disease—if by this term is meant to be expressed the probability of its at once arresting, and as it were stamping it out—my own experience would go to show that its employment is not attended with any such result. In proof of this I may mention that so soon as I became aware of the import of the condition of the respiration, which is first observed at the outset of pneumonia, I attempted, by early bleeding before the disease had advanced beyond the stage indicated by obscurity of the respiratory sounds, to arrest it in that of engorgement. In no case, however, was this practice attended with the result desired; but, on the contrary, in every attack so treated, instead of being altogether prevented, small crepitation seemed to undergo an earlier development,—an occurrence which may perhaps be held as in some measure bearing out the accuracy of the views I have expressed as to the nature of the early stage of the disease in sthenic attacks. The subsequent progress of all such cases early bled was otherwise invariably satisfactory.

I would still, however, feel inclined to consider this question in the light of an open one, and to believe, until distinct proof to the contrary shall have been produced, that bloodletting practised soon after the occurrence of the rigor may possibly at once arrest the disease. I am the more inclined to this view of the matter, because Dr Jameson, my colleague in the 47th Regiment, informs me, that in one case which he bled freely immediately on the man's admission into hospital, and within a very short time of the occurrence of an attack of rigor which, from all the attending circumstances, and happening as it did at a time when pneumonia was prevalent among the men of the corps, appeared to be the initial symptom of an attack of that disease, no further indisposition followed. This may or may not have been a case which, if it had not been so treated, would have proved one of pneumonia; but still I believe the fact is worth recording.

A perusal of the records of cases which I have given above will show I think, upon the whole, with considerable clearness, that it was by limiting the stage to which the diseased action advanced, rather than by affecting the extent of lung to be attacked, that bloodletting manifested its power to shorten the duration of the disease. That it also influenced the amount of lung attacked, however, appears evident, from what was found to have happened in some of the fatal cases, neither of which were bled at the outset of the disease. It may be here stated, with regard to the extent of lung affected in cases early bled, that it amounted, as a general rule, to from one-half to three-fourths; and that in respect of the part first attacked, in no instance did the disease begin at the apex.

After having most carefully watched the whole course of the disease in attacks where bloodletting was employed at the outset, I feel satisfied that in no case so treated did red hepatization take place; both the exaggerated respiratory sound heard near the acme of engorgement, as well as the absence of evidence of the entrance of air, excepting during forced respiration, which frequently for a few hours preceded the setting in of small crepitation, having been, as already so often stated, unconnected with any degree of actual consolidation. Neither were the bronchitic sonorous râles occasionally audible along with large and small crepitation near the middle of the lung, in the course of some of the cases, confounded with the blowing sound of bronchial respiration heard when true hepatization was present. The facts of greatest importance, however, noticed with reference to the employment of bloodletting, were the rapidity with which such cases recovered in proportion to the severity of the attacks, and the uniformity of the results observed on a review of the whole cases so treated, as compared with that obtained in the milder and more asthenic attacks in which bloodletting was not made use of. This has been shown by the tabular statements given at an earlier part of the paper.

A further consideration, possessing also considerable practical importance, is the fact, that in cases not bled it was found that there existed, throughout the greater part of the attack, a danger that a fresh accession of fever, and a rapid advance to hepatization, might not only suddenly occur, but do so at a period of the disease when good results from bloodletting, if it should then be employed, were but little likely to be obtained. In conclusion, I would, however, beg that it may be distinctly understood, that whilst advocating the employment of bloodletting at the outset of sthenic cases of pneumonia, such as are seen in young and previously healthy soldiers, and whilst maintaining also from actual observation that the good results which follow such a mode of treatment surpass in a marked degree those obtained from any other combination of remedies, I do not in any way call in question the value of that mode of treatment termed "restorative," as applied to a particular class of cases, and which has been employed with so much success in the management of the pneumonia seen in civil hospitals in Britain.

It would appear, however, from such limited details as have been given of the cases, on the results obtained, in which this plan of treatment has been based, not only that the attacks were of an asthenic character, but it may also be inferred that, in a large proportion of instances, the disease had advanced to the stage of actual consolidation before it was brought under medical treatment at all. On this supposition, therefore, these were cases in which bloodletting would in all probability have been inadmissible, but they were exactly such as would derive benefit from the description of treatment in question. My own experience of pneumonia would, accordingly, lead me to conclude that it is only in such asthenic cases as those above referred to, modified as they must be by the minor degree of intensity of their exciting cause, as it prevails in a climate equable on the whole as that of Britain is, and influenced also as they cannot fail to be by conditions of food, clothing, locality, and occupation, that this plan of treatment can be advantageously employed.

In sthenic cases, such as came under my own observation in Canada, and of which it is possible that examples may occasionally be met with at home, facts have convinced me that a restorative plan of treatment could not be exclusively employed without the risk of at least a considerable mortality, or at all events the almost certainty of a recovery protracted beyond what it would have been had bloodletting been made use of. I would further add, that what I have learned in the course of this inquiry induces me to believe that much of the confusion and diversity of opinion which have of late years arisen on the subject of the pathology and treatment of pneumonia has been the result of a somewhat restricted view of the extent of the field of inquiry embraced by the subject under investigation, and the too resolute belief, not only that the asthenic pneumonia, which has of late years supplied the larger proportion of the cases met with in this country, is the sole form in which inflammation of the lungs prevails now, but is even the only type in which that disease has existed at any previous period. I must at the same time beg to be pardoned if I venture also to hint my suspicion that some portion of this state of opinion may likewise be due to the condition of the lungs which exists during the highest state of engorgement having been confounded with that state of actual hepatization the occurrence of which renders it absolutely essential for the cure of the disease that the next highest stage—that of suppuration or grey hepatization—should also follow.

I would now close this paper with the expression of a sincere hope that the facts, with the conclusions deduced from them, which I have endeavoured to record, may prove suggestive to other inquirers; and that they may also, perhaps, be the means of inducing my fellow-labourers in the public service to enter upon an inquiry for the prosecution of which they enjoy advantages that do not often fall within the reach of their brethren in civil life.

ARTICLE II.—*Case of Removal of a Fibroid Tumour of the Uterus, weighing* 29 *lbs.* By JAMES D. GILLESPIE, M.D., F.R.C.S.E., Surgeon to the Royal Infirmary, and Donaldson's and Gillespie's Hospitals, etc.

(*Read before the Medico-Chirurgical Society, 6th June* 1866.)

ON the 23d of March 1866, at the request of Dr Tolmie, of Fort Augustus, I admitted into a private ward of the Royal Infirmary the subject of the following narrative:—C. F., aged 26, unmarried, a native of Glenmorison, Inverness-shire.

She stated that, in the autumn of 1863, while in service at Inverness, she was seized with pain in the right hypogastric region, which continued for about a week, when a hard lump in that situation could be felt. She was then admitted into the Inverness Infirmary, and remained under observation for a few days, thereafter returning home. The lump continued to increase gradually, extending uniformly across the abdomen, so that all trace of a distinct tumour on the right side was soon lost.

The catamenia since the commencement of her trouble have been more profuse and more frequent than natural. During the last twelve months the tumour has been more rapidly increasing, her health has been giving way, and she is now anxious to submit to any measure which promises a hope of relief.

On admission, the patient appears to be of a healthy habit of body; she is tall, and has a wiry-looking frame, disfigured, however, by an abdominal tumour, which gives her the appearance of being in the last stage of pregnancy. She is able to walk about with perfect freedom and without pain. On examination, a firm dense elastic spheroidal tumour is felt, extending from the ensiform cartilage to a point lower than, and hanging over as it were, the pubis. From below the umbilicus the spheroidal shape becomes more oval, terminating at last in a blunt cone. When more carefully investigated, a sort of septum is felt on the surface, between the conoid and spheroidal tumours, conveying the impression of two tumours firmly welded together. The consistence of the upper feels much more dense than the lower, which is very elastic, has evidently thinner walls, and must have either fluid or semi-fluid contents. The whole tumour moves freely as regards its posterior part, but the great tension of the abdominal wall anteriorly prevents any accurate diagnosis as to its relations in front.

The measurements are as follows:—

Circumference at the umbilicus, ...	43	inches.
Ensiform cartilage to pubis, ...	21	„
Do. do. to umbilicus, ...	12	„
Umbilicus to pubis, ...	9	„

The os uteri feels natural, but the cervix is much elongated, the womb being evidently dragged upwards. The uterine sound passes into its body six inches; and the tumour moves with the uterus.

Percussion elicits a dull sound over the whole anterior and lateral aspects of the abdomen. Palpation, when gently applied, gives a feeling of fluctuation, depending, however, evidently on a little fluid in the abdominal cavity; more vigorous pressure with the fingers also causes what at first might be mistaken for deep-seated fluctuation, but which, when more carefully noted, is found to depend on the great elasticity of the tumour, causing vibrations in the small quantity of surrounding serum. In order with more certainty to verify this diagnosis, a long exploring needle with canula was passed into the tumour both above and below the umbilicus. On both occasions, a small drop of serum evidently from the cavity escaped, but no fluid whatever from the different portions of tumour. Creaking, as of adhesions, was felt in the left epigastric region, and slightly in the right hypochondrium.

23d April.—To-day, a consultation was held as to the nature of the tumour, and the propriety of operative interference. There were present, Sir James Simpson, Professor Spence, Dr Keiller, Dr Matthews Duncan, and Dr Joseph Bell.

A recto-vesical trocar was thrust into the tumour about an inch and a-half below the umbilicus, with the same result as followed the introduction of the exploring needle on the former occasion, a little clear fluid escaping by the side of the instrument on its first entrance. After being passed in to the extent of fully five inches, it was found that in no part of its course could the instrument move freely in the tumour, but a catheter wire, pushed down the canula, passed easily beyond it into the substance of the tumour.

A stethoscope applied to the os uteri enabled a blowing sound to be distinctly heard, which was inaudible on auscultating the external abdominal wall.

The result arrived at by the consultation was, that the tumour was most probably a fibroid or fibro-cystic tumour of the uterus; that, considering the healthy appearance of the girl, its extirpation by abdominal section might be attempted, provided the very hazardous nature of the operation was fully explained to the patient and her friends.

Dr Thomas Keith, who has had the most extensive and successful practical experience of ovarian tumours in this city, also examined the patient at his own house, and came to the conclusion, that it was a fibroid tumour of the uterus, and that operative interference was justifiable.

No unpleasant symptoms whatever followed the exploratory punctures, but an attack of catarrh with frequent cough delayed the operation, which had been ultimately fixed on at the express desire of the patient and her relatives.

8th May.—To-day, in the presence of Drs Dunsmure, Matthews Duncan, Keiller, Sanders, Alexander R. Simpson, Joseph Bell, James Young, Manford, and a few others, and assisted by Sir James Simpson, Professor Spence, Dr Heron Watson, Dr Black, Mr Annandale, Mr Moir, and my hospital assistants, I proceeded to attempt the extirpation of the tumour. The patient had chloroform administered, and was most ably kept under its influence by Dr Black.

In order to expose the two portions of the tumour, I commenced my incision about an inch and a-half above the umbilicus, and carried it down some inches below that point, carefully dividing the parietes till I came to the peritoneum, and securing by ligature any vessel when cut. The pressure of the tumour anteriorly was found to have caused dense adhesions of the omentum to the tumour and abdominal parietes, so that it required to be cut through before the capsule of the tumour could be exposed. A considerable surface of the glistening smooth fibrous-looking covering of the tumour being laid bare, it was thought advisable to try again whether any cyst existed, by evacuating which the opening up of the abdominal wall would not require to be extended, so a large ovariotomy trocar was plunged in, but nothing escaped. It was therefore found necessary to extend the incision, at first downwards to within two inches of the pubis, and then upwards to about three inches from the ensiform cartilage, thus causing a wound sixteen inches in length. By means of the hands, scraping with the nails, and as little as possible of the knife and scissors, the anterior and lateral adhesions were separated, and the tumour, being perfectly free behind, was easily turned out; its pedicle, about six inches broad, consisting of the fundus of the uterus and both broad and round ligaments; the ovaries being healthy.

The bloodvessels, and especially the veins passing from the pedicle into the tumour, were of enormous size,—one vein on the right side being so much dilated that it looked like the colon, requiring a narrow scrutiny to make out the distinction. Care being taken to avoid these vessels, three double pack-thread ligatures were passed through the pedicle and firmly tied; the first, securing the left broad and round ligaments with dilated vessels; the second, the body of the uterus; and the third, the right broad and round ligaments. The tumour was then cut away at about an inch beyond the ligatures. As a little oozing still continued from the cut pedicle, it was deemed safer to put on a clamp, which it was found could easily now be applied, over the part embraced by the ligatures. The right ovary was included in the clamp. As oozing from many points, chiefly in the cut and torn omentum, still prevailed, no attempt to bring the wound together was made till that had subsided.

The stitches of silver wire were inserted broad and deep so as to include and bring together the cut edges of the peritoneum.

The clamp was brought outside at the lower part of the wound, and did not cause much dragging.

The tumour was removed within three-quarters of an hour of commencing the chloroform, but the subsequent closure of the wound was delayed above an hour for the arrestment of all hæmorrhage.

A suppository, containing one-half grain of the muriate of morphia, was inserted into the rectum immediatly after the operation.

The patient seemed to bear the shock well, the pulse continuing throughout of fair strength.

6.30 P.M.—Suppository repeated, as she complains of much pain.

7.30 P.M.—Pulse 88; tendency to sickness; ice.

10 P.M.—Pulse 104; slight sickness.

9th May, 4.30 A.M.—Pulse still rising, 124; dozing occasionally; retching from time to time; no swelling or tympanitis.

8 A.M.—Pulse 130; considerable tenderness of abdomen. Another suppository. Hot fomentations.

4 P.M.—Pulse 136; retching incessant all day; everything taken rejected.

6 P.M.—Mustard over the stomach.

11 P.M.—Sickness somewhat abated, but pulse feeble. Brandy and beef-juice.

10th May, 3 A.M.—Quarter-grain morphia suppository.

5 A.M.—Pulse 140; very weak. Injection of beef-juice and brandy.

8 A.M.—Pulse not improved. Injection repeated. A little iced champagne to be given every half-hour.

12 noon.—Considerably weaker. Nothing seems to control the retching. Clamp removed.

2 P.M.—Opium, gr. i. in pill, followed by grs. xx. of bismuth. Slight improvement appeared to follow this, but erelong sickness returned.

3 P.M.—Evidently sinking. Respiration laborious; twitching of the arms.

3.30 P.M.—Slight convulsions. Pulse imperceptible.

4 P.M.—Died quietly. Sensible to the last.

Post-mortem Examination, 21 *hours after death, by Dr Grainger Stewart, F.R.C.P., Pathologist to the Royal Infirmary.*

There was an incision about thirteen inches long in the middle line of the abdomen, commencing a little above the pubes. At the upper part the lips were adherent, and through the lower portion the blackened pedicle projected. There was some extravasation of blood and suppuration in the anterior wall of the abdomen, near the line of incision. There was general peritonitis, more marked in the lower part of the cavity; the omentum was firmly bound by old adhesions to the anterior wall. The intestines were distended with flatus, loosely matted together by recent lymph. The rectum and bladder were natural; the vagina also was natural; the cervix uteri was much elongated. The uterus was cut across obliquely, the incision passing downwards and backwards, and separated both Fallopian tubes and the whole fundus from the rest of the organ. A ligature was tied round the upper part of the cervix, and beyond this ligature the tissues were in a sloughy condition. The left ovary, the broad and round ligaments, and the outer four-fifth of the Fallopian tube, remained. The right ovary had been removed; the fimbriated extremity of the Fallopian tube remained. A ligature had been passed through the broad ligament of the left side, had included broad and round ligaments and Fallopian tube; and on the right side there were two distinct ligatures, of which one enclosed a number of vessels in the broad ligament—the other, two portions of tissue with some vessels farther down. There were distinct thrombi in many of the vessels of the right side, *none* in those of the left; there was no sloughing beyond the point at which the clamp had been applied, and most of the sloughy part projected through the abdominal wall. A probe was readily passed through the os uteri, and through the cavity of the uterus, to the external parts, and came out in the middle of the black sloughy projecting parts.

Description of Tumour, by Dr Sanders, F.R.C.P., Conservator of the Royal College of Surgeons.

The tumour was of very large dimensions; it weighed about twenty-nine pounds, after the blood had mostly drained away from it. The shape was globular-oval; the circumference measuring vertically thirty-four inches, transversely twenty-eight inches. The external surface was uniform, except that nearly the lower fourth anteriorly projected above the rest of the tumour, in the form of a rounded eminence about the size of a cocoa-nut, separated externally all round by a shallow groove from the main body of the tumour, but quite continuous with it in substance internally. The whole tumour felt resistent and tough, but had a very marked feeling of tense fluctuation; especially the smaller projection just mentioned, which felt like a cyst full of fluid.

The external tunic of the tumour consisted of thickened fibrous membrane, which could be artificially separated into several layers. The anterior surface had contracted strong adhesions; posteriorly, the outer membranes were smooth and free from adhesions. Numerous very large bloodvessels were spread over the surface of the tumour; the veins especially contained a large quantity of blood. On the posterior surface of the tumour, at its lower part, the upper portion of the fundus of the uterus was involved in the tumour and had been removed with it. The opening into the uterine cavity made by the operation was nearly circular and about 1½ inch in diameter. On inserting the finger, the portion of the uterine cavity was found to extend on both sides like a sinus, to the right for 2½ inches, and 1½ inch to the left. The portion of uterus removed was immediately below the Fallopian tubes: a small portion of the upper part of the broad ligament was observed on the left side, but scarcely any on the right. The uterine walls were greatly thickened, as was more fully seen on section.

The tumour was now bisected vertically, the incision passing through the middle of the opening into the uterine cavity. The surface of section measured thirteen inches vertically and ten transversly. The tumour presented the appearance of the fibrous (fibroid) tumour of the uterus, consisting of white fibres in compact arrangement, forming imperfectly-defined lobules and lobes, the fibres sometimes presenting a curved arrangement. A good deal of serum was infiltrated through the tumour, imparting a certain degree of œdematous softness to the tough and dense fibrous tissue. The lobes of the tumour were partially separated by rather narrow interstices often several inches (3 to 4) in length. These interstices were filled up by very loose and open areolar tissue, the meshes of which were filled by clear transparent serum, so as to form a kind of false cysts. Although these false cysts were filled with fluid, yet when punctured, or even when cut open, the fluid was so retained by the loose areolar tissue, that it remained *in situ*, and only gradually drained off after a considerable interval of time. This was especially the case in regard to the rounded projection at the lower anterior part of the main tumour. This secondary swelling consisted almost entirely of fluid, contained, as described, in the meshes of a loose areolar tissue. The walls of the uterus, as seen on section, were greatly hypertrophied; they measured fully one inch in thickness, and their vessels and venous sinuses were as numerous and large as in the fully-developed uterus of pregnancy (the thickness of the walls being greater than that of pregnancy). The fibrous tumour had been formed in the outer sub-peritoneal layers of the fundus uteri somewhat anteriorly, and in its growth had passed forwards and upwards into the peritoneal cavity, causing at the same time hypertrophy of the uterus and elongation of its cavity by the upward traction of the growth. The uterine muscular wall could be distinctly traced, forming the exterior wall of the tumour upwards 8½ inches above the uterine cavity, and downwards six inches below it, the muscular wall thinning gradually away till it became lost and confounded in the outer fibrous membranes of the tumour. Although the outer membrane of the tumour was distinct, and at parts separated by loose fibrous tissue from the tumour, yet at other parts the junction was so intimate and the tissue so continuous, that the fibrous tumour could not possibly have been enucleated. This continuity of structure was especially obvious when the tumour was embedded in and had grown from the fundus uteri.

The microscopic structure of the tumour presented the usual appearances; the white fibrous tissue was abundant, the muscular fibres scanty.

Remarks.

The only question to which I shall confine myself in my remarks on this case is, whether removal of a fibroid tumour of the uterus by gastrotomy is justifiable. The operation may be said to be still in its infancy, for comparatively few cases—none as yet in Scotland—are on record.[1]

It is not many years since a similar question was stated with regard to ovariotomy, and vehement was the opposition it met with; yet there are few surgeons of the present day so bigoted as to resist the overwhelming evidence of success now placed before them, or so cruel as to deny, in properly selected cases, the fair prospect of relief afforded to patients, who would otherwise of a certainty die a painful and lingering death. As it was with ovarian disease, so I would fain hope it may ultimately become with fibroid tumours of the uterus; yet there are many circumstances to indicate that such cannot be to any great extent the case. There are two especial points to be considered: *first*, The extreme difficulty of diagnosis as to the nature of the tumour and its attachments; and, *secondly*, The dangers directly resulting from the operation.

The diagnosis of each case can only be approached with any chance of success by keeping the patient for a considerable time under careful observation; obtaining accurate information as to previous history, watching the patient's general health, and making repeated examinations of the tumour. Even after all this, there are many opportunities for error, which unfortunately can only be discovered, not rectified, after the peritoneum has been opened.

The dangers resulting from the operation have in a minor degree been successfully combated in ovariotomy, but the cases are not analogous, and it would be wrong to infer, in the present state of our knowledge, that anything like the same amount of success can ever attend extirpation of fibroid growths of the uterus. The necessary extensive opening into the abdominal cavity; the large amount of peritoneum injured; the sloughing of a thick and fleshy pedicle; the loss of blood, whether from the cut abdominal and pelvic vessels or those permeating the tumour, and the danger of shock to the system from the liberty taken with an organ so important as the womb in the female economy, all militate against any sanguine hope of successful removal.

It must be borne in mind, that some fibroid growths may not cause serious symptoms, or at all events not for a very long period of time; and it is only those cases where immediate or rapidly approaching danger to life is apprehended that the question of extirpation can be broached.

The question being mooted, it requires to be shown, whether the success of the operation hitherto has been such as to induce surgeons to attempt it; and I fear, were we merely to take the statistics of the mortality resulting therefrom, our judgment would be hostile to interference. Dr Horatio Storer, of Boston, has lately[1] given a table showing the number of cases as yet known, with their results—24 operations with 18 deaths; so that only one in four has recovered. I confess that such a mortality might well induce medical men to shrink from the task; but if we analyze the causes of death, we find that, as science advances, we may legitimately hope the death-rate can be materially lessened.

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[1] Sir James Y. Simpson has had a case of the kind, but it has not yet been published.

A table is given at length by Dr Storer, but the conclusions may be shortly given thus:—Of the 18 deaths, 6 were from shock, 5 from hæmorrhage, chiefly from slipping of ligatures, 6 from peritonitis, and 1 from accident—"allowed by the nurse to fall on the floor on the thirteenth day."

I believe that hereafter, owing to great care in securing the bloodvessels at the time they are cut, and still greater care in the treatment of the pedicle, the percentage of cases of death from shock or from secondary hæmorrhage will be much diminished; but I fear that occasional deaths from peritonitis must be expected. If the mortality average is only lowered by one-half, it will place the operation in almost as favourable a position as some acknowledged and ordinary classes of cases in surgical practice.

In conclusion, I would direct your attention to the fact, that the diagnosis of the tumour was satisfactorily made out prior to the operation; that it actually consisted of two tumours, different in density, but welded together most intimately; that the huge mass was separated from its connexions and turned out of the abdomen with very little loss of blood, and was followed by hardly any shock; that the post-mortem examination showed death to have resulted from pure general peritonitis,—a casualty which might have resulted from a much less formidable wound of the peritoneum.

For a well put together resumé of the literature of the extirpation of fibroid uterine growths, I must refer you to Dr Storer's article in the American Journal for January 1866, where you will find, most graphically described, a successful case of the kind which occurred lately in his own practice.

Dr Storer's success was, I confess, the chief inducement for my undertaking the operation; and a perusal of Dr Thomas Keith's, Mr Spencer Wells', and Mr Baker Brown's ovariotomy cases still further confirmed my determination. Were another case of the kind to present itself in my practice, I may truly say, that the difficulties experienced in the operation would not deter me from attempting it again, nor yet would the unfavourable result, for fatal peritonitis might have ensued after a much less formidable wound of the abdominal parietes.

I differ, however, entirely from Dr Storer's views with regard to the duty of a surgeon to his patient, and I agree with Mr Spencer

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[1] American Journal of the Medical Sciences, January 1866.

Wells, that an operation of so extremely hazardous a nature should not be urged on the sufferer, but rather that its risks should be fully explained, and it should only be undertaken at the express desire of the patient and her friends.

Had such not been my line of conduct in the present case, its unfortunate termination would have made my conscience not void of offence either before God or before man.

ARTICLE III.—*Notes on the Prison Dietaries in Scotland.* By J. B. THOMSON, L.R.C.S.E., Resident Surgeon to the General Prison for Scotland. PART II.

IN the last May number of the Medical Journal, some Notes appeared from me on the Prison Dietaries of Scotland, which showed the satisfactory character of the existing dietaries compared with previous defective dietaries. The dietaries for the decennial period 1844–1853 inclusive, from defective alimentation, induced diseases of debility, diarrhœa, dysentery, scrofula, scurvy, and a low physical condition in numbers of prisoners; while the improved dietaries during the decennial period 1854–1863 inclusive, were attended by no such results. The general health of prisoners has been good; no diseases from defective nutrition have appeared; the amount of sickness has fallen from 65 to 45 per cent.; the death-rate from 1·41 to 1·15 per cent.; the number of diseases contracted after admission has decreased from 27 to 15 per cent.; and the number of prisoners off work from sickness has decreased from 4½ to 3½ days on the total average daily prison population. These results are all the more remarkable, seeing that during the latter ten years transportation has been abolished, which has thrown back upon our prisons the worst of the criminal classes, who contribute most to our sickness and death-rate.

Conclusive as these facts and figures are in favour of our improved prison dietaries, it seemed proper and necessary to continue the inquiry further, and procure all the information possible as to the best dietary for Scottish prisoners. With this view circulars were sent to each of the prisons of Scotland by the Managers under the Prisons Scotland Administration Act, requesting the governors and surgeons to answer certain queries, of which the following is a brief analysis:—

Of the Returns by Governors and Surgeons in the Prisons of Scotland.

The dietaries sanctioned by the Secretary of State on the 29th September 1854, as set forth by the Rules for Prisons in Scotland, are in general use, without any material variation. This part of my paper need not here be burdened with copies of the rates and regulations of these dietaries, as these will appear afterwards. There was in the local prisons little or no overplus of food from any of the rates, with some exceptions, calling for slight reductions. This was especially the case on certain days in the General Prison at Perth.

Each individual prisoner is restricted to his precise allowance fixed by rule, and if any prisoners do not consume the whole allotted to them, the others are not permitted to take what is left.

No diseases can be traced by the surgeon to any of the rates of dietary.

The sufficiency of the dietaries was held generally fit to maintain health. Only out-door labourers and large-bodied men, especially if long confined before trial, do not thrive in prison. The surgeon, however, has power to alter the rates, if he sees fit, according to age, sex, size, hard labour, etc.

Want of proper exercise in the open air, or defective airing-grounds, appeared to take away from the success of the dietaries in certain local prisons.

One of the queries sent to the prisons referred to the weights of prisoners on admission and at liberation,—a test which the English Commission on Prison Dietaries seem to ignore, but which Professor Christison and myself concur in thinking of much value.

The following passage is from our Joint Report on Prison Dietaries recently sent to Sir George Grey :—

"We are of opinion that no better test of the adequacy of a particular dietary for the nourishment of a body of men, of the class to which the great mass of the prisoners in Scotland belong, has yet been discovered than the fact that they gain or maintain weight. The test, we are aware, has been objected to; and it is objectionable if trusted to under all conditions. In some circumstances men may lose weight, and yet increase in healthiness and vigour. In other circumstances they may decline in health and strength, though they gain weight. But these objections apply only to the unconditional employment of the test in individual instances, and with a disregard of the other characters of sound health and activity. When applied, however, to considerable bodies of men, all placed in similar circumstances in other respects besides their dietary, and in the very simple conditions in which the inmates of the Scottish prisons are situated, a general loss of weight on the one hand, or a general small gain or maintenance of weight on the other, has hitherto proved in our experience an invariable indication of the adequacy or inadequacy of a dietary for due nutrition. In the inquiries made on this subject in the Scottish prisons, due attention has always been paid to the other tests of healthiness,—such as the appearance of the prisoners, their fitness for such work as they have to do, and their freedom from actual disease. The result has been, that a dietary with general loss of weight has always been attended in the course of time with lowering of the physical condition of the prisoners, increased ill health, and even positive epidemic diseases, if very long continued. Hence, until a simpler, quicker, and more precise test shall be discovered, we advise that the present method be continued as quite trustworthy under the conditions in which it has hitherto been relied on."

An abstract from a Table containing the weighings of 4800 prisoners in local prisons, shows the following details:—

Rate			MALES. lbs.	MALES. oz.	FEMALES. lbs.	FEMALES. oz.
Rate	I.	Average amount gained per prisoner by those who gained weight, ...	2	14¾	3	9¼
〃	II.	do. do.	3	9¼	4	6¼
〃	III.	do. do.	5	8¾	6	0¾
〃	I.	Average balance of gain per prisoner over loss on total number of prisoners, . .	0	1¾	1	3¼
〃	II.	do. do. . .	0	8¼	2	4¼
〃	III.	do. do. . .	2	10¾	3	3¼

			MALES.	FEMALES.
〃	I.	Percentage who had not lost weight, . .	75·7	87·7
〃	II.	do. do.	81·5	87·6
〃	III.	do. do.	81·7	84·7
〃	I.	Percentage who lost weight,	24·2	12·2
〃	II.	do. do.	18·4	12·3
〃	III.	do. do.	18·2	15·2

In the above abstract the females stand up as having gained considerably more than the males; pointing to the fact that the same diet adequate for males is more than adequate for females. Heretofore in Scotland, juveniles and females in prison have been placed on the same rates of diet as adult males; henceforth a considerable reduction on the adult male dietary is proposed for juveniles under 14 years of age and for females.

In the General Prison for Scotland, where all long sentenced prisoners, and all our female convicts are detained, the weight of the different classes of prisoners were found:—

Rate	I.	Of juveniles, 100 weighed, had at liberation each gained about 14 lbs.			
〃	〃	Of female imprisonment prisoners (not convicts), gained or maintained weight		80	per cent.
〃	〃	Of female convicts during probationary period,	do.	87	〃
〃	II.	Of female convicts on liberation, . .	do.	58	〃
〃	III.	Of male imprisonment (not convict) prisoners,	do.	88	〃
〃	IV.	Of male convicts, ...	do.	85	〃

It thus appears that all the classes of prisoners in the local prisons and in the General Prison maintain at liberation a gain of weight of 80 per cent. and upwards, excepting the female convicts, who, as above stated, fall to 58 per cent. This I attempt to explain by the influence of anxiety incident to approaching liberation. During imprisonment even long sentenced female convicts maintain weight to about 70 per cent.; and the falling off is found to take place a few months before liberation. The last months of imprisonment are stated to be the most irksome to convicts, they fret, get sleepless, and lose appetite, because of the anxieties about the future, and their return to common life.

We proceed to set forth briefly—*The Comparative Values in Nutrition and Cost, of the English and Scotch Prison Dietaries.*

This examination was naturally called for in consequence of the

English Dietary Commission being before us, so that we might have the benefit of their proceedings.

The low amount of food supplied by the county and borough gaols of England to prisoners, contrasts very strongly with the Scotch allowances, and is such that all experience has satisfied us that the amount is not fit to support prisoners in health.

The following table shows the amount of food, nutritive value, and costs, of the lowest dietaries in English prisons:—

County and Borough Gaols,—Without Hard Labour.

Class.	Duration of Sentence.	Weekly Food.	Men.	Nutritive Values.				Cost.
				Nitrogenous.	Carboniferous.	Mineral.	Total.	
			Oz.					s. d.
I.	One week, or less.	Bread, ...	128	10·4	58·2	1·9	70·5	0 $10\frac{8}{12}$
		Pudg. { Indian Meal,	$7\frac{4}{7}$	0·8	5·8	0·1	6·7	0 $0\frac{6}{12}$
		Pudg. { SkimmedMilk,	$10\frac{2}{7}$	0·4	0·6	0·0	1·0	0 $0\frac{4}{12}$
		Potatoes, . . .	24	0·3	5·4	0·2	5·9	0 $0\frac{6}{12}$
				11·9	70·0	2·2	84·1	1 0
II.	After one week, and up to first month inclusive.	Bread, ...	128	10·4	58·2	1·9	70·5	0 $10\frac{8}{12}$
		Oatmeal, . . .	14	2·2	9·5	0·4	12·1	0 $1\frac{2}{12}$
		Cheese, . . .	1	0·3	0·2	0·0	0·5	0 $0\frac{3}{12}$
		Pudg. { Indian Meal, .	$10\frac{5}{7}$	1·1	7·7	0·1	8·9	0 $0\frac{9}{12}$
		Pudg. { Skimmed Milk,	$13\frac{4}{7}$	0·5	0·9	0·0	1·4	0 $0\frac{6}{12}$
		Potatoes, . . .	36	0·5	8·1	0·3	8·9	0 $0\frac{10}{12}$
				15·0	84·6	2·7	102·3	1 $2\frac{1}{12}$

Class I. for males affords only 12 oz. of daily nutriment, of which less than 2 oz. are nitrogenous; and for females, not 10 oz. of nutriment are in the whole daily allowance, of which about 1⅛ oz. are nitrogenous. As far back as 1841, I find Dr Alison stating to the Board of Directors of Prisons in Scotland,—"I am clearly of opinion that there should be no rate of diet amounting to less than 20 ounces of solid food in the day." And one of the conclusions arrived at by Dr Christison, from extensive experiments and observation, was, "that the general health of prisoners, even under short sentences, of two months or even less, cannot be maintained on less than 17 oz. daily of well-selected food, of which nearly 4 oz. should be nitrogenous." We have, therefore, reason to believe that these low rates of English prisons cannot but prove injurious to the physical condition of prisoners.

In Scottish local prisons there is a dietary (seldom employed) for convicted prisoners confined for any term *not exceeding three days;* and I give the nutritive and cost values of this dietary, adding 2½ oz. molasses or sugar on the second or alternate days:—

Dietary in the Local Prisons of Scotland.

Classes of Prisoners.	Weekly Food.	Ounces.	Nutritive Values.				Cost.
			Nitrogenous.	Carboniferous.	Mineral.	TOTAL.	s. d.
Convicted Prisoners confined for any term not exceeding three days.	Bread, . . .	28	4·4	19·0	0·8	24·2	0 $2\frac{6}{12}$
	Oatmeal, . .	112	9·1	50·9	1·6	61·6	0 $9\frac{4}{12}$
	Molasses or sugar,	2¼	...	2·3	...	2·3	0 $0\frac{2}{12}$
			13·5	72·2	2·4	88·1	1 0

This dietary yields only a little more than 12 oz. nutriment daily, and of this scarcely 2 oz. are nitrogenous matter, and therefore this must be looked upon as a penal dietary. The same remark is applicable to Classes I. and II. of the dietaries of the county and borough gaols of England, which do not come up to our estimate of alimentation necessary; the latter showing only 15 oz. nutriment, of which little more than 2 oz. are nitrogenous.

A leading feature in our Scottish as compared with the English dietaries is the amount of food furnished by the former compared with the latter at a cheaper rate. Comparing our local prison rates with the county and borough gaol rates we have calculated the amounts and costs, and find that

In Scotland.				In England.		
Rate 1 affords	118 oz. nutrition for	1s. 4½d. weekly		Class 3,	116 oz. for	1s. $7\frac{8}{12}$
〃 2 〃	145 〃	1s. $7\frac{11}{12}$d 〃		〃 4,	125 〃	1s. $9\frac{6}{12}$
〃 3 〃	172 〃	1s.$11\frac{6}{12}$ 〃		〃 5,	134 〃	1s.$10\frac{8}{12}$

To show this we may offer an extract from the Table from which the above is copied :—

Highest Rate in the Local Prisons of Scotland.

Classes of Prisoners.	Weekly Food.	Oz.	Nutritive Values.				Cost.
			Nitrogenous.	Carboniferous.	Mineral.	TOTAL.	s. d.
1st, Prisoners under sentences exceeding six months. 2d, For periods with hard labour exceeding sixty days. 3d, Male and female convicts before removal to a convict prison.	Bread, . . .	84	6·8	38·2	1·2	46·2	0 7
	Oatmeal, . .	98	15·6	66·6	2·9	85·1	0 $8\frac{8}{12}$
	Barley, . . .	28	2·2	21·2	0·2	23·6	0 $1\frac{11}{12}$
	Estimd. in Soup. } Meat, . .	7	1·3	0·9	0·1	2·3	0 $0\frac{8}{12}$
	Estimd. in Soup. } Succulent vegetables,	5	...	0·6	...	0·6	0 $1\frac{4}{12}$
	Skimmed or butter milk, .	140	5·6	8·5	1·0	15·1	$3\frac{11}{12}$
			31·5	136·0	5·4	172·9	1 $11\frac{6}{12}$

County and Borough Gaols of England,—Without Hard Labour.

Class.	Duration of Sentence.	Weekly Food.	Men.	Nutritive Values.				Cost.	
				Nitrogenous.	Carboniferous.	Mineral.	TOTAL.		
			Oz.					s.	d.
V.	After six months.	Bread, . . .	160	13·1	72·8	2·4	88·3	1	$1\frac{4}{12}$
		Oatmeal, . .	28	4·4	19·0	0·8	24·2	0	$2\frac{6}{12}$
		Molasses, . .	2	0·0	1·8	0·0	1·8	0	$0\frac{3}{12}$
		Cheese, . . .	3	0·9	0·7	0·1	1·7	0	$0\frac{9}{12}$
		Pudg. { Suet, . .	$3\frac{3}{8}$	0·0	2·9	0·0	2·9	0	$1\frac{6}{12}$
		Pudg. { Flour, . .	$14\frac{5}{8}$	2·0	10·4	0·1	12·5	0	$1\frac{3}{12}$
		Potatoes, . .	96	1·3	21·6	0·9	23·8	0	$2\frac{3}{12}$
		Soup. { Meat, . .	$13\frac{1}{2}$	2·5	1·8	0·2	4·5	0	$4\frac{6}{12}$
		Soup. { Barley, .	3	0·2	2·2	0·0	2·4	0	$0\frac{3}{12}$
		Soup. { Vegetables,	9	0·1	1·0	0·0	1·1	0	$0\frac{6}{12}$
				24·5	134·2	4·5	163·2	2	3

Comparing the above, we find that in Scotland 172 oz. nutrition cost 1s. 11$\frac{6}{12}$d.; in England, 134 oz. cost 1s. 10$\frac{8}{12}$d.; the reason for which is, that in Scotland the large use of milk enables us to dispense in local prisons, in the case of prisoners under twenty-four months' sentences, with the expensive article meat, which appears in all the English dietary scales in the solid form as well as in soup.

Our Scottish local prison dietaries, indeed, contain no meat except in small quantities in broth; but milk, which contains largely the nutriment of animal food, is our substitute for meat, and is found nutritious enough for all prisoners whose sentences do not extend beyond twenty-four months.

Upon the whole, our comparison of the English dietaries with the Scotch, satisfies us that, in the plain and substantial articles of food and in their economic value, our dietary system is the better, and that the amounts allowed to the short-sentenced prisoners, although by no means so low, are put upon more safe scientific bases.

Conclusions:—

1. That the lowest dietaries, I. and II. classes, in English county and borough prisons, are so low as to be considered punitive and unfit to sustain health.

2. That our adoption of milk and oatmeal, without the expensive article of meat, makes our dietaries cheaper and equally nutritive with the English.

ARTICLE IV.—*On the Mode of Action of Strychnia.* By ALEXANDER INGRAM SPENCE, M.D., Assistant-Physician, Royal Edinburgh Asylum.

(*Read before the Medico-Chirurgical Society*, 14*th May* 1866.)

VARIOUS opinions have been entertained with regard to the mode in which poisons produce their remote or general effects. At one time it was universally believed that they acted by transmitting some peculiar influence along the nerves to the different organs of the body. This belief derived its chief support from the great rapidity with which certain poisons were known to operate. Thus, prussic acid has caused death in three seconds after its administration, and conia when injected into a vein has also proved fatal within the same period of time. Investigations made to ascertain the rate of the circulation have shown, however, that even this rapid action is not incompatible with the view that such substances may act by being absorbed. In an experiment by Mr Blake, a drachm of liquor ammoniæ mixed with five drachms of water was injected into the jugular vein of a dog. A glass rod which had been dipped in hydrochloric acid was held immediately under the nostrils, in order to detect any ammonia that might escape from the lungs. Four seconds after the introduction of the first drop of the solution of ammonia into the vein, it was plainly detected in the air expired from the lungs, by the white vapours that were formed on its coming into contact with the vapour of the hydrochloric acid. It had thus in four seconds passed from the jugular vein through the right side of the heart, reached the capillaries in the lungs; permeated the parietes of these vessels, and escaped through the whole length of the air tubes.[1] In an experiment like this it is doubtful whether so minute a portion of time as four seconds can be noted with accuracy; but as the same objection applies to those experiments which have been made to show the rapid action of prussic acid and other substances, we must conclude that it is impossible to determine the mode in which a poison acts, by attempting to measure the time which it takes to produce its effects. We must also guard against supposing that the presence of a poison in the blood, or in any particular organ, is a proof that it does not act through the nerves. A solution of tartar emetic when injected into a vein causes vomiting, and it has, therefore, been concluded that in this case it could act only by being conveyed along with the blood to the nervous centres. It must be borne in mind, however, that the blood would also convey it to the mucous membrane of the stomach, where it would come into contact with the extremities of the nerve fibres distributed to that organ; and we know that irritation of the periphery of the vagus will induce vomiting as readily as irritation of the medulla oblongata. The only means of determining whether a poison can act through the nerves is by direct experiment. For this purpose, the method at first pursued was to divide all the structures of the limb of an animal, with the exception of the principal nerve, and then to thrust some poison into an incision made in the separated extremity. The result in every instance in which the experiment was performed was, that symptoms of poisoning failed to occur. But such an experiment is not free from objection. In order that any object may produce its proper effect on a nerve, it is necessary that it should be applied to the periphery, and not to the trunk. Here, however, the poison was applied not to the uninjured extremities of the nerves, but to fibres which had been cut through in making the incision into which it was thrust. It may be urged, therefore, that we could not expect it to act any more than we could expect colours to produce their peculiar impression on the brain if the retina were lacerated. In order to obviate this objection, other investigators adopted the following plan:—A portion of the intestine of an animal was selected, and ligatures were applied to the bloodvessels so as to stop the circulation in the part, and at the same time not interfere with the nerves supplying it. Some poison was then applied to the inner surface of the bowel; but although the substance would thus come into contact with the uninjured extremities of the nerves distributed to the mucous membrane, no effect was ever produced. Experiments of this kind, taken along with the fact that certain poisons act when applied directly to the organs of the body, have convinced most inquirers that the theory of nervous conduction is erroneous.[1]

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[1] Edin. Med. and Surg. Jour., vol. liii. p. 38.

The four experiments now to be described are, as regards their results, merely confirmatory of those recorded by other investigators; but in their mode of performance some variations have been made from the methods usually followed so as to show as clearly as possible the total inability of strychnia to act through the nerves. The experiments were performed on frogs, animals which possess the twofold advantage of being very sensitive to the action of strychnia, and of surviving for a considerable time arrestment of the circulation.

Exp. 1.—A ligature was placed round the heart of a frog at the auricles. A solution containing the one-fourth part of a grain of strychnia was then injected into the stomach by means of a tube passed down the œsophagus. Thirty-five minutes after the injection the animal was able to leap about vigorously; fifty minutes after the injection it was still able to move its limbs although feebly; in five minutes more all movements had ceased. No symptoms of poisoning with strychnia occurred. By examination after death it was found that the stomach had been empty at the time the poison was injected into it.

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[1] Some physiologists, however, still adhere to this theory. Thus, M. Cl. Bernard, in speaking of strychnia, says,—"Let it (strychnia) be introduced into the circulating fluid, . . . supposing *all* the posterior roots which arise from the spinal cord to have been divided, no convulsions of course would be produced; but let a single root be left untouched, and through this single channel the necessary impulsion will be given; the blood which circulates throughout the system, and conveys the toxic substance into every part, brings it in contact with the extremities of that sensitive root, which alone remains uninjured, and still communicates with the spinal cord, and general effects are at once developed."—*Med. Times and Gazette*, *26th May* 1860.

In a series of experiments which I performed in order to determine how long a dose of strychnia such as was used in this case would take to act, if the circulation were not interfered with, I found that spasms generally came on within three minutes, and were never delayed beyond five minutes, after the administration of the poison. In the above experiment, therefore, the length of time the animal survived was far more than what was requisite for the strychnia to produce its effects.

Exp. 2.—A ligature was placed round the heart at the auricles, and a solution, containing the one-fourth part of a grain of strychnia, was injected into the stomach, as in Exp. 1. Half-an-hour after the injection the animal was quite active and unaffected by the poison. The ligature was then removed. In less than a minute after removal of the ligature, symptoms of poisoning with strychnia were fully developed.

Exp. 3.—A ligature was placed round the base of the heart. Two grains of the alcoholic extract of nux vomica, mixed with twenty minims of water, were then injected into the cavity of the abdomen. Forty-four minutes after the injection the animal was still able to leap about; one hour and seventeen minutes after the injection, movements of the limbs could be excited by irritating the integument. Up to the time of death no symptoms of poisoning occurred.

In this experiment, the poison would come into contact with the extremities of the nerves even more readily than when applied to a mucous surface. A similar quantity of the same specimen of extract, when injected into the abdomen of a frog in which the circulation was not arrested, produced general spasm in three minutes.

Against these experiments it may be urged, that although arrestment of the circulation did not for some time destroy nor seriously impair the ordinary functions of the nervous system, yet it so affected this system as to prevent it taking on the action which strychnia tends to induce. In order to meet such an objection, the following experiment was performed:—

Exp. 4.—A ligature was placed round the heart of a frog at the auricles. One and a-half grains of extract of nux vomica, mixed with fifteen minims of water, were then injected into the stomach, by means of a tube passed down the œsophagus. Half-an-hour after the injection the animal was leaping about quite unaffected by the poison. The cranium was now cut through immediately behind the eyes with a pair of scissors, and a piece of extract of nux vomica was applied to the exposed nervous matter. Three minutes after this application the action of the poison was fully developed.

Here, in the same animal, under the same circumstance (arrestment of the circulation), we have the poison producing no effect when applied to the extremities of the nerves, but acting readily when applied to the nervous centres.

A curious theory with regard to the action of poisons was advanced by Messrs Addison and Morgan.[1] It was to the effect that a poison when absorbed produced a peculiar impression on the nerves distributed to the coats of the bloodvessels, this impression being conveyed along these nerves to the different organs of the body, which were thus affected independently of the substance reaching them through the circulation. This view at one time met with very general acceptance, but it has now fallen into discredit; not so much, however, from any proof that is erroneous, as from the growth of other opinions. The following experiment was performed in order to test its accuracy:—

Exp. 5.—The apex of the ventricle of a frog's heart was cut away. An opening was then made in the anterior abdominal vein, and a strong solution of extract of nux vomica was injected into the vein in an upward direction,—that is, towards the liver and heart. The injection was continued steadily for some time, so as to diffuse the fluid over a large area of the vascular system. The quantity of nux vomica injected was not measured, but it was far more than what would be required to induce spasms, if administered in the ordinary way. Twenty-six minutes after the injection the animal was able to leap about; forty-three minutes after the injection it was still able to move its limbs. In a few minutes more all movements ceased. No symptoms of poisoning occurred.

By removing the apex of the ventricle, the propulsion of the blood was prevented, so that the poison injected into the vein could not reach the nervous centres through the circulation; and by confining the operation to the apex, interference with the nerves supplying the bloodvessels was avoided.

It is now generally believed that the action of poisons depends on these substances being conveyed to the organs of the body through the circulation. The accuracy of this theory, as far as regards strychnia, can be easily proved: for if we apply the poison directly to the spinal cord, tetanic spasms are readily induced. This has been demonstrated by numerous investigators, and requires no further confirmation; but in making some experiments on this point, I have observed certain phenomena which appear worthy of recording, as throwing some light both on the action of strychnia and on the functions of the nerve cells. The method which I adopted, as detailed in the following experiment, was to apply the poison not to the spinal cord, but to the posterior part of the brain,[1] and allow it to work its way downwards.

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[1] An Essay on the Operation of Poisonous Agents upon the Living Body. By John Morgan, F.L.S., and Thomas Addison, M.D. London: 1829.

EXP. 6.—The greater part of the ventricle of a frog's heart was cut away. After allowing the blood to be expelled to as great an extent as possible, the remains of the heart were excised. The articulation of the lower jaw on each side was then cut through, in order to facilitate the next part of the operation, which consisted in cutting through the cranium with a pair of scissors immediately behind the eyes. To the part of the brain thus exposed a piece of extract of nux vomica was applied. In about three minutes afterwards the action of the poison began to manifest itself. The muscles of the throat were first affected with spasm. The anterior extremities then became violently tetanised and directed upwards on each side of the head. Shortly afterwards the posterior extremities became affected with spasm. The thighs were pulled up on each side of the abdomen, the legs being at the same time extended on the thighs, so that the animal's hind feet were as far forwards as its head. During the early attacks of spasm, the direction of the limbs continued the same as has been described; but as the convulsions went on, the anterior extremities became arched in front of the thorax, and the posterior extremities became directed downwards, being, however, extended widely apart. In the later attacks the anterior extremities became directed more downwards, and the posterior extremities became approximated to each other. In this experiment there was also observed that over-excitability of the surface which is such a marked feature in poisoning with strychnia, but the phenomena which attended its occurrence were peculiar. It manifested itself first in the skin covering the throat, and extended gradually downwards, affecting successively the skin of the anterior extremities, trunk, and posterior extremities. It then passed off in the order in which it had appeared. The most interesting circumstance, however, was, that the excitability of the integument, both in its appearance and disappearance, pursued a course quite distinct from the spasm which affected the muscles. At the commencement of the experiment irritation applied to the posterior extremities produced in these limbs merely ordinary reflex movements, whilst irritation applied to the throat or anterior extremities produced spasm of all the limbs, posterior as well as anterior. Towards the close of the experiment the excitability of the upper part of the body had disappeared, no spasm nor movement of any kind could be induced by pinching the throat or anterior extremities, whilst a touch applied to the posterior extremities produced spasm not only of them but also of the anterior extremities.

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[1] In a series of experiments in which nux vomica was applied to different parts of the cerebro-spinal axis, I found that it acted most readily when applied at the optic thalami, or at the region lying between these and the medulla oblongata, but it is possible that this may have depended merely on the poison being more readily imbibed at these parts.

In certain repetitions of this experiment, the spinal cord was divided above the lumbo-sacral enlargement, after the lower extremities had been for a considerable time affected with spasm, and it was found that, although thus separated from the upper part of the animal, they continued in a tetanic state. If, however, the section were made very soon after the muscles of the lower extremities had become affected with spasm, and whilst the over-excitability of the integument was still confined to the upper part of the animal, then the lower limbs lost their tetanic state, although they continued capable of executing ordinary reflex movements.

In order to ensure the success of this experiment, there are two conditions necessary,—the one is, that the animal should make a good recovery from the shock produced by cutting through the cranium; the other, that the poison should pass freely down the spinal cord. The last object is best secured by allowing the blood to be thoroughly expelled from the system by means of the aperture in the heart before applying the nux vomica to the brain.

With regard to the directions assumed by the limbs, the explanation appears to be simply that the muscles which raise a limb are supplied with nerves from a higher part of the cord than those which direct it downwards, and that the nux vomica passing down the spinal marrow will, therefore, come into contact first with the nerve cells supplying the elevator, and afterwards with those supplying the depressor muscles.

I have repeated this experiment a great number of times, and in some cases have found that the peculiar directions assumed by the limbs were not so well marked as in the instance given above; but the phenomena with regard to the excitability of the integument were always distinct when the operations had been conducted so as to ensure the ready passage of the nux vomica down the spinal canal. To these phenomena, which are the most important part of the experiment, we would now direct attention.

It was observed that, towards the close of the experiment, irritation applied to the posterior part of the body induced spasm of the whole animal, whilst irritation applied to the anterior part failed in inducing any movement whatever. In order to explain how the integument covering the upper part of the animal had lost its excitability, although at the commencement of the experiment it had been so sensitive, we might suppose that the nerves supplying the skin in this region had been affected by the poison. It must be borne in mind, however, that strychnia exerts its specific action not on the nerve fibres, but on the nerve cells; and although, in common with other narcotics, it may possess the power of paralyzing the nerves, it is plain that, in this instance, such a result had not taken place; for the fact that movements could be induced in the upper extremities by irritating the lower limbs, shows that the nerve trunks in the former were unaffected by the poison, as indeed we should expect them to be; for the nux vomica was not circulating through the body so as to come into contact with them, the heart having been excised before this substance was applied to the brain. It is to the spinal cord itself, therefore, that we must look for an explanation of the phenomena.

It is generally held that a nerve cell in the spinal chord possesses at least two properties, that of exciting contraction in a muscle—the motor function, and that of receiving certain impressions from the surface—the reflex function. The fact that, at the termination of Experiment 6, spasms occurred at all in the anterior part of the animal shows that the nerve cells in the upper part of the cord still retained their motor power. The fact also that these spasms were induced by irritating the integument, even although the irritation had to be applied to the lower limbs, would appear to show that these same cells retained their reflex power. But if we hold that the motor function and the reflex function reside in one and the same cell, it is impossible to explain why this cell should respond to an irritation from the lower part of the body and not to one from the upper, with which it is more immediately connected. The phenomena which have been detailed can only be satisfactorily accounted for by admitting that the motor and reflex faculties are not situated in the same cell, but that there are two kinds of nerve cells, one possessing motor power, the other destitute of this function, but having the property on the one hand of receiving reflex impressions from the surface, and on the other of stimulating the motor cells to action, and that it is on this second class, which may be termed reflex, or, perhaps better, intermediate cells, that strychnia exerts its action, leaving the motor cells unaffected. The phenomena in Experiment 6 may then be explained in the following manner:—The nux vomica, when applied at the brain, passes gradually downwards, and comes into contact with the intermediate nerve cells situated in the upper part of the cerebro-spinal axis. These cells are thrown into a state of excitability, and, when stimulated by an impression from the surface, radiate their influence not only on the motor cells in their vicinity, but also on those further down, and so, when the upper extremities are touched, we have spasm of all the limbs. Although strychnia may at first exalt the functions of the intermediate cells, its effect ultimately is to deprive them of life, so that in the course of the experiment the cells of this description which are situated in the upper part of the cerebro-spinal axis lose their vitality, and when irritation is applied to the anterior part of the animal no movements can be excited, the motor cells being still quite capable of acting, but the connecting link between them and external impressions being destroyed. The intermediate cells in the lower part of the cord are later in being affected by the poison, and therefore retain their vitality longer; so that in the last stage of the experiment, when irritation is applied to the posterior part of the animal, these cells are thrown into a state of excitement, and radiate their influence on the motor cells both in the lower and upper parts of the cord, and spasm of all the limbs takes place.

Jacubowitsch has described three kinds of nerve cells as occurring in the spinal cord. The cells of the first class are large, and provided with numerous processes. These cells Jacubowitsch has styled motor. Those of the second class are smaller, and possessed of fewer branches, and are termed sensitive. Those of the third class are of an intermediate size, and are distinguished by their rounded form and scanty supply of fibres. They are supposed by Jacubowitsch to be analogous to the cells which occur in the ganglia of the sympathetic. Virchow, whilst admitting that it is impossible in every single case to determine from the appearance of a cell to what category it belongs, concurs in the views laid down by Jacubowitsch as being in the main correct, and goes on to observe that, "in the course of time probably further distinctions, perhaps even in the internal economy of these cells, will be detected, but at present nothing more can be stated concerning them. This is a very great and lamentable void in our knowledge, and a void which we now particularly feel, because this is just the place where we should have to discuss the specific action of these different elements. But it must not be overlooked that these conditions are among the most difficult which are ever submitted to anatomical investigation, and that one's endeavours to procure specimens of a character to convince one's own eyes alone nearly always fail, because it is scarcely possible to succeed in effecting a real isolation of the cells with all their processes and connexions, and because on account of the extraordinary fragility of these bodies one is nearly always compelled to trace them out in hardened sections. When sections are made of structures which to a great extent are composed of fibres, and in which these run in a longitudinal, a transverse, or an oblique direction, so that an interlacement is always presented to the view, it depends, of course, entirely upon a happy chance whether in a section the course of a single fibre can be followed up over a large space with a certain degree of distinctness. This difficulty can certainly be lessened by making the sections in all possible directions, and thus increasing the probability of at last stumbling upon the direction followed by the divisions of a branch; but even then the obstacles still remain so great that one can hardly expect ever to be able to take in at one view the whole of the ramifications and connexions of a cell belonging to the great nervous centres, that is provided with at all a large number of branches."[1]

When we consider the difficulties thus attending a microscopical examination of the spinal cord, we will the more readily avail ourselves of the assistance afforded by other modes of investigation into the nature of this organ, and although it is impossible to isolate the nerve cells so as to apply agents such as strychnia to each of them separately, yet the peculiar train of phenomena which is excited when this substance is employed, as described in Experiment 6, leads us to determine, even although it be by a process of reasoning by exclusion, that there are distinct classes of nerve cells, and that these classes have a great difference in their internal economy.

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[1] Virchow's Cellular Pathology,—Translation by Chance,—p. 262.

Jacubowitsch has not connected any of his varieties of nerve cells peculiarly with the reflex function, but the views which have been brought forward in this paper are not unsupported by other inquirers. Van der Kolk[1] came to the conclusion, without any physiological proof from experiment on the living animal, but simply from a consideration of the anatomical arrangement of the elements of the spinal cord, that the motor and reflex functions must reside in distinct groups of cells, and from this basis he constructed a theory with regard to reflex action similar to the one which we have deduced from the above experiment with strychnia.

Different explanations have been given of the manner in which strychnia produces the state of excitement in the nerve cells. Some have supposed that it does not accomplish this by direct action, but rather by inducing some morbid change in the blood. Dr Harley has performed some interesting experiments with regard to this point. In one of these, "a certain quantity of fresh calf's blood was first shaken with renewed portions of air until it had become thoroughly saturated with oxygen, then introduced into a graduated glass vessel with 100 per cent. of ordinary air, corked carefully up, and kept during 24 hours in a room of moderate temperature. In order to favour the mutual action of the air and blood, the vessel was frequently agitated. At the expiration of the 24 hours the gas was analyzed by Bunsen's method, and the following was found to be its composition:—In 100 parts oxygen 11·33, carb. acid 5·96, nitrogen 82·71. A second portion of the same blood, to which 0·005 grains of strychnia were added, was confined with the same quantity of air for the same time, and treated in every respect in a similar manner. The gas yielded in this case—oxygen 17·82, carb. acid 2·73, nitrogen 79·45."[2]

It would thus appear that strychnia has the property of preventing the constituents of the blood absorbing oxygen and exhaling carbonic acid, and Dr Harley is of opinion that this action is quite sufficient to account for the phenomena which arise in poisoning with the alkaloid. The spasms, he thinks, depend merely on disordered nutrition of the nervous centres, "the spinal cord receiving nutritive materials which, not having undergone the oxidizing process, are unfit for assimilation." Dr Radcliffe has also adopted this view,[1] but there appears to be a risk of error in concluding, that because strychnia produces certain changes in the blood, these changes must necessarily be the cause of the tetanic state of the cord which occurs when that substance has been administered. The alteration in the condition of the blood may be merely concomitant, and not at all essential to the peculiar action of the poison.

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[1] Professor Schrœder van der Kolk on the Minute Structure and Functions of the Spinal Cord and Medulla Oblongata, and on the Proximate Cause and Rational Treatment of Epilepsy. Translated by W. D. Moore, A.B., M.B. New Sydenham Society, 1859.

[2] The Lancet, June 14, 1856.

In order to determine whether the chemical phenomena observed by Dr Harley will really account for the action of strychnia in the living animal, the following experiment was performed.

Exp. 7.—A frog was placed in a vessel containing pure oxygen. At the end of four and a-half hours the atmosphere which it had been breathing was examined, and found to be so little deteriorated that it caused a spark to burst into flame quite readily. The animal was then removed, and after getting a dose of strychnia it was immediately placed in another vessel containing fresh oxygen. In three minutes spasms were developed, and they were as well marked as in an ordinary case of poisoning.

In this experiment the blood and tissues of the animal must have been thoroughly oxygenated, and yet the action of the poison was not retarded.

Other pathologists have supposed that strychnia produces a tetanic state, not by causing chemical changes in the blood, but by increasing the amount of that fluid in the spinal cord, and so giving rise to exalted action of the organ. The hyperæmia which has been observed can, however, be readily enough explained as being merely the result and not the cause of the tetanic condition, for when any part of the body is thrown into a state of great activity, it naturally receives an increased amount of nutritive fluid. That a large supply of blood is not essential to the action of strychnia on the nervous centres may be seen by referring to Experiment 6. No doubt it is impossible, even by the means adopted in this experiment, to drain all the blood out of the vessels, but when an animal is treated as it was in this instance, it is impossible that hyperæmia could occur. The truth appears to be, that when a dose of strychnia is administered the blood serves only as a medium for conveying the alkaloid to the nervous centres, or at most that the changes occurring in that fluid are of secondary importance, the peculiar condition of the spinal cord being caused by the direct operation of the poison on the nerve cells. This operation consists in the strychnia stimulating the nerve cells to excessive action, and keeping them in this condition until they perish from exhaustion. It often happens that before this can be accomplished death takes place from asphyxia brought on by spasm of the respiratory muscles; and, in certain cases in which a very large dose of strychnia had been administered to frogs, I have observed the animals die, although convulsions had occurred only to a very limited extent, the nerve cells appearing to have been overwhelmed at once by the poison. This latter fact may perhaps not be destitute of interest in a medico-legal point of view.

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[1] Epileptic and other Convulsive Affections of the Nervous System: their Pathology and Treatment. By Charles Bland Radcliffe, M.D. Second edition. London: 1858. P. 92.

Closely resembling the symptoms produced by strychnia are those which are observed to occur in tetanus, and, therefore, some observations on the pathology of this disease may not be out of place in the present article. In the recent researches on tetanus by Mr Lockhart Clarke, the post-mortem appearances which he has described as being found in the spinal cord are congestion, particularly of the grey matter; unnatural dilation of the bloodvessels; and a granular exudation both in the grey and white substance, occurring generally, if not always, at the side of or around bloodvessels, and breaking up the natural tissue of the part.[1] Mr Clarke would appear to consider the initial step in the diseased action as being situated outside the nerve cells in the bloodvessels or connective tissue, but when we look at the great similarity which exists between the condition of the spinal cord in tetanus and in poisoning with strychnia, and when we know that strychnia produces the state of excitement in the nervous centres by direct contact with the nerve cells, and independently of the blood altogether, we will not be exceeding the limits of just inference if we conclude that in tetanus also it is the nerve cells which are primarily affected, and that the morbid changes observed by Mr Clarke are the result and not the cause of the diseased action, the nerve cells, owing to their state of excitement, influencing the tissues around them, and thus giving rise to congestion and exudation.

This view receives further support when we consider the order in which tetanus attacks the body. If the morbid action were situated primarily in the bloodvessels or connective tissue, we should expect the disease to commence sometimes at one part of the cord, sometimes at another; or if it had a tendency to select any portion, it would be that which was nearest the source of irritation; thus, in the case of a wound of the foot, we should have the spasms showing themselves first in the lower extremities; but instead of this being the case, the tetanic state commences almost always in the upper part of the cerebro-spinal axis wherever the source of irritation may have been situated. This is easily enough explained, if we admit that it is the nerve cells which are primarily affected. Tetanus is a disease of the reflex system, and with regard to this system nothing is better marked than the close relation which exists between the reflex cells throughout the whole nervous centres. This is well seen in an ordinary case of poisoning with strychnia. If a touch be applied to any part of the body, the whole animal is at once thrown into spasms. When, therefore, under certain conditions a nerve fibre connected with the reflex system receives an injury, all the reflex nerve cells, in whatever part of the cerebro-spinal axis they may be situated, participate in the irritation which ensues; but as the reflex cells in the medulla oblongata and its neighbourhood are the most highly developed and the most sensitive to stimulation of any in the whole nervous centres, it is they which are the first to take on the diseased action that the irritation tends to induce.

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[1] The Lancet, September 3, 1864.

The exudation described by Mr Clarke may, however, exercise an important influence over the disease. One of the differences between tetanus and poisoning with strychnia is the absence in the former of any complete remission between the attacks of spasm. This permanent contraction of the muscles will be readily understood when we consider that the nerve cells are exposed to constant pressure from matter effused around them.

In order to find a remedy which shall have the power of removing the peculiar condition of the nervous centres which exists in tetanus and in poisoning with strychnia, nearly every medicinal substance has been tried. Two of these substances, woorara and nicotine, have had, perhaps, more pretensions put forward in their favour than any of the others.

As an example of the numerous experiments which have been made with woorara we give the following. It is one performed by Dr Harley. "The $\frac{1}{300}$th of a grain of wourali, and $\frac{1}{40}$th of a grain of strychnia, were injected into the abdomen of a frog at five minutes past one; at ten minutes past, it became very tetanic; at half-past one (twenty minutes afterwards), it became perfectly flaccid; and the next day it appeared perfectly well."[1] In reading experiments like this, we cannot fail in being astonished why a substance that is apparently so complete an antidote in the case of cold-blooded animals, should not be equally successful in the case of warm-blooded ones, seeing that there is no poison more uniform in its effects on every class of the animal kingdom than strychnia. The error arises from the misconception which exists as to the quantity of strychnia required to cause death in cold-blooded animals. It is well known that frogs are extremely sensitive to the action of this drug, the $\frac{1}{3000}$th part of a grain being sufficient to cause spasm. This is owing to the high state of development which the reflex function attains in this animal, most of its movements being capable of being performed after the brain is removed; and we have seen that strychnia acts specially on the reflex system. But its peculiarity of organization is also the means of protecting the animal from the fatal effects of the drug. Strychnia usually destroys life in the warm-blooded animals, not by depriving the nerve cells of their vitality, but by arresting the respiration. In frogs this function may be kept in abeyance for a long time without causing death, so that these animals can survive a much larger dose of the poison than is usually supposed. I have given a frog the $\frac{1}{80}$th part of a grain of acetate of strychnia in the form of solution, and have seen it recover without any antidote being administered.

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[1] The Lancet June 14, 1856.

Tobacco was long ago proposed for the treatment of tetanus. More recently, Mr Haughton has recommended the alkaloid nicotine. Experience has not yet shown that the disease is to be cured by this new remedy any more than by the multitude of others which have preceded it. It is held, however, very generally that the drug is a complete antidote for poisoning with strychnia in cold-blooded animals. This belief rests on certain experiments performed by Mr Haughton. On looking over these experiments, there appears to be only one in which the animal recovered from the effects of the strychnia. It is as follows:—"Another frog was placed in a mixed bath of nicotine and strychnine of the same strength as that last described (*i.e.*, a bath of ten ounces of water, holding in solution five grains of strychnia and five grains of nicotine), and removed after an interval of ten minutes. After removal, in thirty-two minutes, the first symptom of emprosthotonos appeared, and the convulsions continued for many hours; but the animal ultimately recovered completely, and is still in the enjoyment of health and life, after a lapse of many days."[1]

An experiment performed in this manner is liable to very serious objections: for when an animal is merely kept in a bath of fluid for a limited time, there is no certainty whatever that a fatal dose of the poison has really passed into the system. I have repeated Mr Haughton's experiment three times, using a bath containing the same quantity of strychnia dissolved in the same amount of fluid, but leaving out the nicotine altogether. In one of these experiments, the frog continued free from any symptoms of poisoning for an hour and a-half: spasms then came on, and after they had continued for many hours, the animal recovered completely. Here the result was as favourable as what it was in Mr Haughton's experiment, and yet no antidote was administered. In the second experiment, the animal, after continuing in a tetanic state for two days, died. In the third experiment, the animal, which was washed immediately after being taken out of the bath, never showed any symptoms of poisoning whatever. The recovery or death of the animals appeared to depend entirely on the condition of their skin, as regards its absorbing powers, during the time that they were kept in the bath. Whilst, however, we cannot regard the claims of nicotine as a true antidote to strychnine to be established, there can be no doubt that, in poisoning with this latter substance, the administration of tobacco in some form or other is likely to be highly useful. In poisoning with strychnia in warm-blooded animals, death generally takes place, not from the exhaustion of the nerve cells, but from the asphyxia produced by the spasm of the respiratory muscles, and recovery will be promoted by any means which shall keep the muscles flaccid until time has elapsed for the poison to be thrown out of the system. Tobacco is probably as efficient an agent as we could employ for producing this flaccidity of the muscles.

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[1] Proceedings of the Royal Irish Academy, vol. vi. p. 423.

As so many liquid and solid substances had been used without effect as antidotes for strychnia, I thought of trying certain of the gaseous bodies. Oxygen, protoxide of nitrogen, and carbonic acid were employed, the animals being kept in atmospheres of each of these gases, of various strengths, both before and after the administration of the alkaloid. In no case was the action of the poison prevented.

With regard to the medicinal employment of strychnia, we may observe that, if the view brought forward in this paper be correct as to the reflex nerve cells existing as a distinct class, and being peculiarly subject to the action of strychnia, then the general indication will be to use the drug in those diseases in which the reflex cells require stimulation, although practically there may be difficulty in determining particular cases.

The only other point relating to strychnia to which we will refer is the mode of its administration. It has been supposed that the endermic application of this drug possesses great advantages over the ordinary method of using it, but the experiments which have been described above are directly opposed to this idea. Strychnia cannot possibly act except by entering the general circulation, and if it be sprinkled on a blistered surface, there is no certainty what quantity will be absorbed. On the other hand, when it is administered by the mouth, it is readily absorbed, is quite as efficacious, and is much more completely under control.

ARTICLE V.—*Case of Addison's Disease.* By JAMES WHITEFORD, B.A., M.D., Greenock.

(*Read before the Medico-Chirurgical Society, 6th June* 1866.)

ON Saturday evening, the 7th April, I was called to see Mrs S., a widow, æt. 54 years, residing in the house of a relative in this town. I found her in bed and complaining of nothing but extreme weakness and exhaustion; she had no pain, no sickness, and only slight thirst. I was told that she had long been subject to severe bilious attacks, and she considered this to be one of these, attributing it to cold and fatigue to which she had been exposed in the washing-house a few days before. Her countenance had a shrunken, exhausted, cadaverous appearance. The eyes were sunken and lustreless, and the infra-orbital spaces were dark like plumbago. The pulse was small, frequent, and irregular. The tongue was rather dry, pointed, and covered with a slight white coating,—the edges being not redder than natural. The skin was dry, and of increased heat, but the most remarkable feature in her case was the very dark bronzed colour of the entire cutaneous surface. She was quite as dark as a South American Indian. The bronzing was not uniformly dark, but was deeper at some places than others. As I have already mentioned, the infra-orbital spaces were of the colour of plumbago; and over the eyebrows there were large patches of a decidedly deeper bronzed shade than the general tint. The mucous surface of the lips—especially the lower—was marked with bluish black patches, like that of a dog. Generally, the bronzing was of a darker shade in the neighbourhood of joints, on the internal as well as the external aspect of the limbs in those situations. Her hair was dark-brown; her eyes black. The conjunctiva was clear and pearly. I was told by the relative with whom she resided, that she had always been rather of a dark complexion, but that she had become much darker since she began to suffer from her *bilious* attack. Heart and lung sounds were quite natural, and no anæmic *bruit* was to be detected either at the base of the heart or in the neck. The impulse of the heart was weak. There was no tenderness over the abdomen when pressed upon. The hepatic dulness extended to 1½ inch below the margin of the ribs. There was no dropsy.

On the following day, I examined the urine which was very scanty. It was of S. G. 1034, dark-red, opalescent, acid; no albumen; no sediment. I had directed sinapisms to be applied to the hypochondrium, and small doses of a stimulant composed of aromatic spirit of ammonia and camphor mixture, to be given at short intervals; and further, as the bowels had not acted for two days, a gentle laxative of castor oil to be administered in the morning. The oil acted once and well enough, and when I saw her on the following day, she expressed herself as better.

On Monday, however, notwithstanding that she had taken a little nourishment and occasionally a little brandy and soda water, she was weaker; and from this time, although retaining consciousness, she gradually sank, and died on the night of Tuesday the 10th April.

The following points relating to the history of her ailment, I elicited from her sons, a few days after her death, and after I had made the post-mortem examination:—

She had been a healthy woman until about 1847, two years after her last confinement, when she was afflicted with general dropsy; she was very ill, and not expected to recover. Under the care of Dr Paxton, of Kilmarnock, she got well, and got into tolerably good health again, except that she afterwards continued subject to occasional bilious attacks. These attacks were very frequent from 1849 till 1851 or thereabouts, during which time she had much anxiety and hard work. In 1852, she became a widow, and her family were altogether dependent upon her. From this time, her *bilious attacks* became less frequent, but more severe in character. Since 1849, her colour during these attacks was noticed, both by herself and her friends, to have been peculiar. Patches of brown, described as masses of *fernie tickles*, were observed on the face, and particularly over the eyebrows. These patches did not disappear as the attack went off, but remained persistent and increased with each returning attack.

In the summer of 1864, she had a run to catch the steam-boat at Gourock, and was much fatigued and heated by the exertion, which caused her to lay up for a week or more in bed. It was at this time that the dark spots on the lips were first noticed, and they never disappeared again. On this occasion she saw a medical man in Glasgow, who gave her some purgative medicines, and thereafter she got better. In August 1865, she had an illness, in which sickness, languor, and prostration were her only complaints,—but no pain,—and during this illness her colour became very dark, quite as dark as at the time of her death (according to the best of the recollection of my informant). After a month's change of air at Garelochhead, she recovered her usual health and strength, and her colour improved considerably.

Being convinced that this was an example of what Dr Addison described as "Bronzed Skin," and being anxious to ascertain the pathological condition of the viscera, and mainly that of the *supra-renal* capsules, I sought and obtained permission to examine the body, in which I was kindly assisted by my friend Dr Marshall, to whom I mentioned my view of the case.

Autopsy, forty-two hours after death.—The body appeared to be moderately well nourished. Although the features were shrunken, yet the trunk and limbs were not at all wasted, both the abdominal and thoracic walls containing a considerable layer of fat. The bronzed colour of the skin seemed to be in some measure communicated to this adipose substance, which had a tawny hue. On reflecting the covering of the ribs, the muscular tissue appeared of a natural colour and consistence.

The right lung was adherent,—the left, quite free,—the tissue of both, so far as could be ascertained, was quite healthy.

The heart was of normal size, and had a considerable layer of fat, which obliterated the sulci on its external surface. The walls of both ventricles were rather thin, the muscular substance pale-looking. The right ventricle contained a little dark fluid blood,—the left was empty; the pericardium contained only a very little serous fluid.

The stomach and small intestine were considerably distended with gas. The duodenum was opened; its contents were a greyish yellow fluid with whitish flocculent substance suspended. The common duct was quite permeable. The gall-bladder was moderately filled with greenish-yellow fluid bile.

The liver projected a little below the margin of the ribs, and showed a well-marked transverse groove or constriction, such as is attributed to tight lacing. About 1½ inch to the right of the falciform ligament, and about the same distance from the anterior margin, there was, on the convex surface, a cirrhotic-like depression, about the size of a shilling. A section of the liver substance looked paler than natural; otherwise, nothing noteworthy was observable.

The kidneys were of normal size. The cortical substance appeared to be soft, and the capsular investment was not readily stripped off.

The spleen was of middling size but soft and friable.

The *supra-renal* capsules were found to have undergone undoubtedly a most remarkable change. The parenchyma proper, or cortical substance in both had entirely disappeared. The right body was shrivelled up and appeared as a network of connective tissue, in the upper part of which was embedded a collection of small rough calculi of irregular form and shape. The left body, on being freed from the fat which enveloped it, seemed to have preserved its outward form, but the interior was a distended cavity closely packed with similar calculi.

The liver substance, the cortical substance of the kidney, and the muscular tissue of the heart were each examined microscopically.

The hepatic cells contained granular matter with occasional oil globules, but the nuclei were present, and the *contour* of the cells was complete; the cell walls were not broken down. From the kidney, the Malpighian corpuscles were visible, and seemed to be filled with a cloudy or turbid substance, but I could detect no appearance of fat globules. The cardiac muscular substance presented nothing special. There was no sign of degeneration such as might have been shown by disappearance of the striation or shrivelling up of the sarcolema.

The calcareous deposit I have not examined chemically.

Remarks.

Without entering upon any discussion of the different opinions entertained about the pathology of this disease, which is still wrapped in obscurity, I beg to record this case as a typical example of *Addison's disease,*—meaning thereby, *a case of disease of the supra-renal capsules, accompanied by bronzing of the skin.*

A fair consideration of the clinical history and post-mortem appearances in this case will lead, I think, to the following conclusions:—

1*st*, That there was an absence of any important signs of organic disease, except such as were recorded by Dr Addison as pathognomonic of this disease.

2*d*, That there is a distinct correspondence in the history, between the accessions of bronzing of the skin, and the particular attacks which were characterized mainly by *muscular debility*, which latter is regarded by Dr Wilks as the *essential* sign of this disease.

It would be idle to speculate on the *rationale* of the phenomena in question, until we are in possession of more exact notions of the physiological relations of the organs principally affected, and, moreover, until we are better acquainted with the laws which regulate the pigmentary changes in the several tissues of the body. The variety of opinions which have been advanced with regard to this, has arisen mainly from the imperfection, I apprehend, of our knowledge of these physiological questions. There is one point in the preceding case which is worthy of remark, viz., the long period of time over which the disease extended, from 1849 until the present year. This being admitted, one could scarcely agree with Buhl, who regards the supra-renal disease as only part of a general disease consisting in the deposit of miliary tubercle in the lungs, liver, spleen, and lymphatic glands; besides that no trace of tubercular disease in any organ was in this instance discovered. The absence of emaciation or muscular atrophy when considered along with the extreme languor and debility, which formed almost the only and certainly the principal clinical symptom, would point towards some disease of the nervous system for an explanation of this phenomenon, which seems to be the one most generally present in the examples of this disease which have been already recorded.

Part Second.

REVIEWS.

Note-Book of Materia Medica, Pharmacology, and Therapeutics. By R. E. SCORESBY-JACKSON, M.D., F.R.S.E., Lecturer on Materia Medica, etc. Edinburgh: Maclachlan and Stewart: 1866.

SINCE the publication of the British Pharmacopœia, new editions of most of the previously-existing works on Materia Medica have been issued; and, in addition, a good many new ones have appeared. In this respect the London and Dublin Medical Schools have been well represented, and we are glad that Edinburgh now puts in a creditable if somewhat tardy appearance. Dr Scoresby-Jackson informs us in his preface that his object, in the publication of this volume, was the preparation of a work "which will relieve the student from much of the mechanical labour of note-taking; and, whilst it supplies a good deal of useful information, will suggest the necessity of a more complete investigation of the subject." The work much more than carries out this modest programme: it is really a complete, though, of course, condensed, treatise on

Materia Medica and Therapeutics, and will be useful not only to Dr Scoresby-Jackson's own pupils, but to medical students in general, and to practitioners.

The work consists of three parts: the first is styled Introductory, the second treats of the Inorganic, and the third of the Organic Materia Medica. It is to the first of these that we shall almost exclusively direct attention.

The author commences by making a few observations on the subjects included under Materia Medica; from these we extract the following passage on the importance of the *prescription*:— "The ultimate object of lectures on Materia Medica is to teach the legitimate use of means to an end. The centre around which the lectures are grouped is the *Physician's prescription*. From the utmost verge of the subject, the thread upon which it hangs leads back to the prescription, not of drugs only, but of everything that can alleviate suffering and cure disease. The ultimate object of medical education is to teach *how to write a prescription*, and in that little act lies the severest test of a physician's attainments. To be examined upon a prescription is to give access to every department of medical learning. If the student could satisfactorily explain the *how*, *what*, *when*, and *why* of prescribing, his education would be complete; but this is not to be attained during his *curriculum* merely, it is what the practitioner is still learning at the close of his career. The practical application of all the medical sciences culminates in the prescription; the ultimate object of Chemistry, Botany, Physiology, Pathology, and the other allied sciences, with respect to Medicine, is to teach the physician how to apply the remedies at his disposal most advantageously to his patient." No doubt the idea is quite correct, although it is perhaps rather strongly expressed.

The subject which first engages attention is "the selection and collection of medicines;" particularly, of course, of the vegetable medicines. This is considered under the heads—1. The natural condition of a plant; 2. How the plant may be affected by a change in its circumstances; 3. Examples quoted as evidence of such change of circumstances. The first of these would have been better omitted. Upwards of two pages are occupied by a brief physiological summary of the structure and life of a plant, which in "Notes of Materia Medica" is decidedly out of place. Among the circumstances which may affect the condition of the plant, the author speaks of the effects of cultivation; the character of the soil, including the effects of manuring; and the nature of the climate. More important points for the student are next considered, namely, the age of the plant and the season at which it is collected. Under the third,—examples quoted as evidence of the influence of such change of circumstances,—the author alludes to a variety of plants the virtues of which are increased or diminished according as they are grown under favourable or unfavourable circumstances.

Thus, cinchonas grown on cold and exposed mountain-sides are richer in alkaloids than others grown in close and unventilated valleys; Indian hemp thrives well in this country, but loses its narcotic properties as well as the resinous covering of its leaves; almost all powerfully odoriferous plants lose their odour in a sandy soil.

After describing the active principles of the vegetable medicines under the heads of alkaloids, organic acids, volatile or essential oils, resins, extractive, fixed oils and fats, saccharine principles, starch, gum, and so on, Dr Scoresby-Jackson treats of pharmaceutical operations, and of weights and measures, and then passes on to "officinal formulæ." This is a very useful section; it contains all the formulæ for waters, liniments, pills, powders, and so on, from the British Pharmacopœia, and shows at a glance the composition of each of them; where necessary, information as to the temperature to be employed, and other particulars, is also given.

The remainder of the introduction is devoted to the consideration of "magistral formulæ, or prescriptions." We are glad to see that this section is unusually full; it is a subject of which many works on Materia Medica treat very meagrely, or not at all, and the consideration of which is sometimes omitted from lectures altogether; yet it is one on which the student naturally seeks for information, and it is highly important that he be early taught the principles of prescribing. Dr Scoresby-Jackson considers,—1*st*, The properties and effects of medicines; 2*d*, Their *modus operandi* and classification; 3*d* and 4*th*, The locality of their action, and the channels by which they are introduced into the system; 5*th*, Circumstances which modify the action of medicines. Under some of these headings additional information might with advantage have been afforded. Dr Scoresby-Jackson seems still to entertain some doubt with regard to the possibility of the system becoming habituated to arsenic-eating. He says, "The statements respecting arsenic-eaters and corrosive-sublimate-eaters have been accepted with hesitation, but of opium-eaters we have unfortunately only too many examples, and of habitual drunkards still more." We are surprised that no allusion is made to the researches of Dr Craig Maclagan regarding arsenic-eating in Styria, who, in a paper published in this Journal, brought forward absolute proof of the existence of the practice, and showed that large doses were taken with impunity. The directions given for the construction of prescriptions are clear and precise.

Of the remainder of the work we shall say but little. The separate articles of the Materia Medica are considered in detail, and their natural history, composition, preparations, actions, and uses are clearly described. In this part of the volume, while the student will not, of course, meet with all the details contained in larger works, he will find almost everything which it is really necessary for him to know. A full index completes the volume, a useful feature in which is that the dose of each of the medicines is given.

History of a Successful Case of Amputation at the Hip-joint. By J. Sampson Gamgee, Surgeon to the Queen's Hospital, Birmingham, etc. With four Photographs, pp. 33, 4to. Churchill and Sons, London: 1865.

Probably never in the annals of surgery has a single case been so carefully detailed and so splendidly illustrated. In addition to every luxury in paper, type, margin, and binding, we have two admirable photographs by Sarony of the patient before and after the operation, and two by Pierre-Petit of the tumours before and after section.

The case was one of no ordinary interest. The tumour was of enormous size; the limb, when amputated, weighing 99 lbs., while the whole weight of the patient before the amputation was certainly less than 200 lbs.—probably a good deal less. For a dresser to support and manipulate this enormous mass during the operation was obviously impossible. The difficulty was overcome by an ingenious contrivance detailed in the paper. Lister's aorta clamp was used to aid in checking hæmorrhage during the operation, and appears to have answered most admirably, as also for checking secondary hæmorrhage on the fifth day.

The operation is carefully described, as also the after-treatment of the case—both seem to have been managed "with brains." The only point on which an exacting critic might seize is the amount of "padding" introduced at various parts of the history of the case. Thus, in the chapter on the "question of operation," we have a page of fine writing on the qualifications of a surgeon; and in the chapter on surgical dietetics we have some remarks (most excellent in themselves) on the mistakes in the out-patient department of hospitals, and there is a whole chapter devoted to "Critical Observations on Medical and Surgical Statistics."

It is difficult to realize, and almost impossible to sympathize with the generosity which prompted Mr Gamgee to present such a glorious pathological specimen to the Paris Society of Surgery. To leave it as a legacy to the Musée Dupuytren would have been a pang,—to make a present of such a tumour seems an almost feminine act of self-sacrifice.

A Practical Treatise on the Diseases of the Testis, Spermatic Cord, and Scrotum. By T. B. Curling, F.R.S., Surgeon to the London Hospital, etc. With numerous Wood Engravings. Third Edition, revised and enlarged, 8vo, pp. 609. Churchill and Sons, London: 1866.

This new edition of Mr Curling's well-known work will be welcome to all who are familiar with the sound sense and practical value of the previous editions. Ten years have intervened since the publication of the second edition, in which period Mr Curling has had ample opportunities of increasing his knowledge of the subject, of which he has taken full advantage.

Three entirely new chapters have been added in the new edition. Two of these are very short:—1. *On Inguinal Hydrocele.*—Of this Mr Curling has seen two cases, and thus defines it,—"A testicle detained in the inguinal canal, or outside the external abdominal ring, and enclosed in a distinct tunica vaginalis, may be surrounded by serum, forming a tumour which may be properly termed *inguinal hydrocele.*" This must necessarily be a very rare affection, for retention of the testicle in the inguinal canal is by no means common, and in almost every case its serous sac communicates with the abdomen, and thus cannot form a hydrocele. 2. *On Congenital Vascular Tumours of the Scrotum.*—These also are rare, vary in their character, being sometimes venous, in other cases arterial, and are to be treated by removal, the arterial ones by ligature, the venous by excision.

The third new chapter is much longer, and more important. *On Sterility.*—Till lately the distinction between *impotency*, or incapacity for sexual intercourse, and *sterility*, or inability to impregnate, has not been sufficiently attended to. In cases where the husband was *not* impotent, and yet no children were born, the barrenness was invariably put down to the credit of the wife. That this is by no means always a just implication, Mr Curling proves in this chapter. He shows, from numerous cases, that a full amount of power for sexual intercourse may be present along with an entire want of fertilizing power, generally from an absence of spermatozoa in the semen. He gives four different causes whence this may arise, with examples of each:—1. *Malposition of the testicles.* Cryptorchids, he says, are almost invariably sterile, though not impotent. 2. *Obstruction in the excretory ducts of the testicle.*—Under this head are given some very interesting observations by M. Gosselin and the author on the risk of sterility being the result of double epididymitis after gonorrhœa or traumatic orchitis. The cases are most conclusive, proving that when both testicles have been inflamed, and a resulting hardness is persistent in the epididymis, the semen, though profuse in quantity, is absolutely destitute of spermatozoa. 3. *From impediments to the escape of the seminal fluid.*—Such as chronic stricture of the urethra, injury or inflammation of the ejaculatory ducts. 4. *From non-ejaculation.*—As a contribution to a subject of which very little is known, this chapter will excite much interest, and, in some cases at least, prove of real practical value.

Regarding the rest of the work there is little room for criticism, and hardly anything that one could wish to be altered. It is refreshing and satisfactory, after all the absurd plans that have been debated within the last ten years, to find Mr Curling summing up the treatment of hydrocele in the following sentence:—" A careful inquiry into the merits of the various modes of effecting the radical cure of hydrocele fully establishes the superiority of the treatment by iodine injection." The injection used by Mr Curling is in the proportion of ℈ ii. of iodine and ʒ ss. of iodide of potassium, to ℥ i. of spirits of wine,—of this he injects ʒ ii. or ʒ iii., which he allows to remain in the sac for five minutes; he then withdraws the fluid with the exception of ʒ ss., which he leaves behind. According to our Edinburgh principles of treatment, we believe that the occasional want of success of which Mr Curling complains can be accounted for by the withdrawal of so large a proportion of the fluid, and upon the fact that he does not seem to lay much stress on the thorough diffusion of the fluid through the sac.

The chapter on Orchitis is full and valuable, and gives prominence to the important practical distinction which exists between cases of simple orchitis and those in which the epididymis is inflamed, either alone or along with the testicle.

On the vexed question of the treatment of Varicocele, Mr Curling gives copious details. As a mild form of treatment he recommends pressure by a pelvic band and pad on the veins of the cord, along with the use of a suspender bandage when the scrotum is very lax. A series of cases is given in which this treatment, continued for months together, effected a cure.

Of the various forms of radical cure, Mr Curling approves of what he calls "Subcutaneous Acupressure," applied as follows:—A straight pin is to be passed between the veins in front, and the cord behind, about two inches above the testicle, and another in a similar manner about three-quarters of an inch below this point. A stout silk ligature is then to be passed in a figure of eight round the cord of each pin, a piece of card being interposed between the ligature and the scrotum to prevent ulceration. Then, with a narrow-bladed tenotomy knife, the veins are to be divided subcutaneously between the pins. The patient is to be kept in bed, and on the sixth day the ligatures are to be divided and the pins withdrawn. A hard lump is felt in the cord at the spot operated on. Of nineteen cases operated on in this manner all did well, but few details are given as to their future history, and we are thus left in ignorance whether the symptoms returned or not. We are told of some that Mr Curling had seen months and years after, in whom no wasting of the testicle had taken place, and one in whom a secondary operation was required.

On the whole, few members of our profession have experience enough to enable them to dispense with the aid of Mr Curling's treatise on the diagnosis and treatment of diseases of the testicle.

The work is nicely printed, and has upwards of fifty wood-cuts. The table of contents, though copious, does not compensate for the want of an index. Perhaps this may be remedied in the *fourth* edition.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION XLVI.—MEETING X.

6th June 1866.—Dr Moir, *President of the Society*, in the Chair.

I. STUMP AFTER ANKLE-JOINT AMPUTATION.

Dr Gillespie exhibited a preparation, showing an ankle-joint stump, which had been removed by him three years previously. The disease had chiefly affected the tarsus and metatarsus. The stump had healed up well; but subsequently caries appeared in the end of the tibia, and the limb was lately amputated higher up. The specimen showed very beautifully the admirable cushion of fibrous fatty tissue for the end of the bone, nearly two inches deep: the caries, which had irregularly eaten into the end of the tibia having a sequestrum enclosed, and the dense porcelainous-looking deposit of new bone in the whole thickness of the tibia extending some inches up.

Dr Gillespie remarked that, caries affecting an ankle-joint stump was of very rare occurrence, and could only be accounted for in this case by the fact of the patient having much too long delayed having his foot removed, which had been for many years a mass of carious bone.

II. COMMINUTED FRACTURE OF THE HUMERUS.

Dr Gillespie showed a comminuted fracture of the humerus removed three weeks after the injury, the patient dying of fracture of the base of the cranium. It illustrated well the reparative efforts of the periosteum, which was studded with new bone, and it also showed how the very sharp ends of an obliquely fractured bone became gradually rounded off.

III. FIBROID TUMOUR OF UTERUS.

Dr Gillespie showed the fibroid tumour of the uterus, to which his paper referred, and also the parts removed from the pelvis after death, showing the ligatures, the position of the clamp, and the state of the pedicle.

IV. ENCEPHALOCELE FROM THE HEAD OF A CHILD.

Mr Annandale showed an encephalocele which he had removed from the head of a child, a patient of Dr Mackenzie of Kelso. The child was seven weeks old, and was born with a tumour as large as its own head, connected with the occiput. The tumour had been punctured soon after birth and a large quantity of thin clear fluid drawn off; the fluid soon collected again, the sac suppurated, and a portion of its wall sloughed. As there was a large suppurating cavity, the profuse discharge from which was weakening the child, and as the neck of the tumour felt solid and the opening in the occipital bone was small, Mr A. thought it right to remove the tumour, its pedicle being first secured by a ligature. On dissecting the tumour, a conical process, having a small canal running down its centre, was found in the posterior wall. This process was composed of fine areolar tissue, and the canal in its centre was closed at its lower end and had no connexion with the granulating sac. The process and canal were evidently continuous with structures inside the cranium. The microscopic examination showed no traces of nerve structure in any portion of the tumour. Mr A. had not yet heard the result of the operation.

V. SINGLE CYST OF MAMMA.

Mr Annandale showed a single cyst removed by Mr Syme from the breast of a young woman. The cyst was peculiar in having in its interior several narrow processes or partitions (not growths) which were connected to the inner wall but did not extend completely across the cavity of the cyst. The contents of this cyst resembled in appearance and structure, as determined by the microscope, thick cream.

VI. URINARY CALCULI.

Mr Annandale showed several calculi which he had removed from the bladder of an old gentleman after death. They were interesting on account of their very irregular shape, which was apparently owing to the irregular condition of the inner coat of the bladder, which resembled in appearance the internal wall of one of the ventricles of the heart. The calculi were composed entirely of phosphates.

VII. CASE OF PYLE-PHLEBITIS OR INFLAMMATION OF THE PORTAL VEIN.

Dr Grainger Stewart showed the liver, mesentery, and pancreas of a man who had died of *pyle-phlebitis* under the care of *Dr Sanders*, in the Royal Infirmary. The history of the case was the following:—A. M., æt. 46, a marble-cutter was admitted 10th May 1866. He had had peritonitis at the age of 15, and ever afterwards suffered from dyspepsia. He was, notwithstanding, a robust vigorous man. About the middle of March, while working as usual, he was seized with intense headache, and soon afterwards with pain in the abdomen and back. He was unable to leave his bed, and two days later took a severe shivering; this recurred several times during the day. From this time, the rigor recurred daily and with a certain amount of regularity, occurring at 10, 3, and 6¼ o'clock, but some of the daily attacks were omitted. Each commenced with pain in the back and calves of the legs. The rigor lasted half-an-hour and was always succeeded by a hot sweating stage which lasted about two hours, just like a fit of ague. After the fits he passed a considerable quantity of urine, which threw down a brick-dust sediment. Between the attacks he was free from pain, but too weak to leave his bed. Quinine was administered by the medical man who attended him prior to his admission, but so far from having any good effect it seeemed to make him worse, and to bring on vomiting, which continued nearly till admission. On admission he was very weak, had a typhoid aspect, and spoke almost in whispers. Intelligence natural. No delirium. The skin was slightly icteric. The pulse was 118, soft and compressible. The tongue was dry and brown in the centre, red at the tip and margins. The abdomen was somewhat full; there was no pain or gurgling on pressure of the right iliac fossa. There was no increase of the hepatic or splenic dulness. The bowels were habitually confined. The breath had a sweet mawkish odour; there were no physical signs of pulmonary affection. The heart sounds were natural, but feeble. The urine was brownish red, acid; contained bile pigment in small amount, and traces of albumen. While in the hospital, he had frequent rigors, and ultimately his symptoms afforded pretty clear evidence of the existence of pyæmia. For a short time before his death he had considerable tenderness on pressure in the epigastrium. He died exhausted on the 4th of June. From a consideration of the symptoms, Dr Sanders regarded the case as probably one of abscess of the liver, with pyæmia.

Autoposy.—The *body* was emaciated. The *heart* was natural. The *lungs* contained numerous secondary abscesses in different stages of formation; and in addition, there was a general pneumonia with consolidation of the lower lobe of the right lung with pleurisy of the corresponding surface. The other lung was intensely congested and œdmatous. There was no free lymph in the *peritoneal cavity*, nor any opacity of the serous membrane, but the whole was of a dark slate-grey colour. The *sigmoid flexure* of the colon was drawn over to the right side, and firmly bound by old adhesions to the last two inches of the ileum, which again was similarly connected with the commencement of the ascending colon. In the cellular tissue behind these adherent points, there was an abscess of the size of a small walnut, containing fetid pus. It id not communicate with the bowel; but in the colon, close to the ileo-cœcal valve, a blackish ulcer of the size of an almond had penetrated the outer coats, and had nearly perforated the mucous membrane.

The portal vein, with its mesenteric tributaries and its branches in the liver, was inflamed: the cavity contained greyish-red pulpy matter, which, on microscopic examination, showed numerous granules and a few bodies resembling white corpuscles of the blood. There was no firm clot in any of the larger branches, but in some of the small branches *very* firm clots existed, which occluded the vessels; and beyond these, both in the mesentery and in the liver, there were portions of the vein healthy and not closed by clot. In the main portion of the vessel the coats were somewhat thickened and destroyed, and the inner coat was distinctly softened, and in some parts so destroyed as to leave the middle coat exposed: in other parts it appeared smooth and shining, after the shreddy decolorized clot had been washed from its surface. The *splenic vein* contained no clot and was perfectly healthy, and there was a well-marked boundary line where it joined the portal. There was also some suppuration at several points outside of the portal vein, in the liver:—1*st*, Close to the porta, in the cellular tissue, there was an abscess apparently somewhat smaller than a pigeon's egg, which was ruptured in removing the parts. 2*d*, At three or four points throughout the substance there were smaller abscesses in close connexion with the sheath of the vessel. In the substance of the liver proper there was no distinct abscess, but at several points there were portions of tissue in the stage of reddish-grey consolidation which precedes suppuration. In the *mesentery*, also, there were numerous tracks of suppuration in connexion with the sheaths of the veins. The intestine was otherwise natural. The liver somewhat flabby and pale. The spleen was of natural size, but flaccid. The kidneys were not enlarged, but the cortical substance was swollen and soft, and many of the tubercles presented exudations and cloudy swelling of the epithelium.

The abscess behind the cœcum was, no doubt, the *origo mali;* the pylephlebitis and abscesses within the liver were the secondary, and the pulmonary abscesses the ultimate consequences.

VIII. CASE OF REMOVAL OF A FIBROUS TUMOUR OF THE UTERUS.

Dr J. D. Gillespie read a paper on this subject, which will be found at page 30 of this number of the Journal.

Dr Sanders observed that uterine tumours of such size as in Dr Gillespie's case were rare. There was, however, in the Museum of the College of Surgeons a cast of one of even larger size: it was called, according to the old nomenclature, "Sarcoma of the uterus." The woman had been a patient of Dr M'Intosh; no operation had been attempted. A small section of this tumour was in the pathological department of the Museum, and its structure was found closely to resemble that of the tumour shown by Dr Gillespie. It was essentially fibrous, but the fibres were softened and œdematous, and the interspaces were filled with fluid. There was no record of the case in the Museum Catalogue.

Sir James Y. Simpson was acquainted with the tumour mentioned by Dr Sanders; Dr M'Intosh was in the habit of showing it to his class. Both ovaries were free; the tumour, a fibroid, grew from the fundus of the uterus. In the case of an enormous uterine fibroid tumour, attached to the fundus uteri by a pedicle, and recorded and figured by Dr Francis of New York, the fibroid mass is stated to have weighed rather more than 100 pounds. In reference to Dr Gillespie's case, he had merely to congratulate him on the very able manner in which he had performed the operation, and on the admirable report which he had now read of it to the Society. With regard to the propriety as a general rule of operating in cases of fibroid tumours of the uterus, the question was one which would probably not be settled till half-a-century hence. One great difference between these growths and ovarian tumours was that the former do not go on to certain and speedy death in the same way as the latter. Ovarian disease, according to some insurance statistics, proved fatal in from six to seven years after being detected; but in reality few cases went on so long. When the tumour attained the size of the uterus at the ninth month of pregnancy, death was seldom delayed for more than a year or two. The course of fibroid tumours, on the other hand, was usually very long. He had yesterday seen a lady walking in the street in which they were met, who had a tumour nearly as large as that in Dr Gillespie's case, and who had suffered from it for upwards of twenty years. These tumours often got into a latent condition, and were troublesome merely from their size. Sometimes, however, they did grow rapidly, and thus might speedily go on to death. Sometimes it became necessary to operate in fibroid tumours for another reason. About ten years ago, he (Sir J. Simpson) had published a case of large fibroid tumour of the uterus, where he had since operated. The question might be put, why did he operate? The patient at first was comparatively comfortable; she was able to go about and perform her ordinary duties. As the tumour increased in size she became more and more helpless, and at last, having become a widow, she said she must positively either starve or have it removed. The operation was performed easily enough; the only great difficulty was in regard to the pedicle, which was so narrow that it was difficult to get threads through it. The tumour was about 30 pounds in weight, and was surrounded by very hypertrophied uterine tissue, the enlarged vessels of which gave rise to a very loud stethoscopic bruit during life. The patient, however, did well for a day, and seemed going on favourably, when sinking set in, and she died at the end of forty-eight hours. There was no hæmorrhage, neither was any trace of inflammation found in the peritoneum. She died from a sort of secondary collapse. In fact, the great objection to operating in cases of fibroid tumours lay in the pedicle. Mr Baker Brown had proposed the actual cautery in ovariotomy, but this did not get over the difficulty. In a case of large pediculated fibroid he had found the actual cautery quite insufficient to arrest the bleeding from the divided stalk. At present, the great desideratum in regard to the removal of large fibroids was the want of safe and adequate hæmostatic means. Hysterotomy for fibroid tumours would never, he believed, become a frequent and commendable operation like ovariotomy for ovarian dropsies. The exact anatomical relations of the implicated parts were not so easily predicated and diagnosed as in ovarian disease; the necessity for operation was, as already stated, very rarely so great; but, in a few exceptional cases, it might, and probably would, come to be recognised as a legitimate surgical procedure.

PROCEEDINGS OF THE EDINBURGH OBSTETRICAL SOCIETY.

SESSION XXV.—MEETING XIII.

23d May 1866.—Dr BURN, *Vice-President*, in the Chair.

I. CASE OF EARLY MENSTRUATION. BY PROFESSOR HUBBARD. COMMUNICATED BY DR JAMES YOUNG.

In February last a little Irish girl was brought to my clinique, by her parents, presenting the stature and development of a child of eight or ten years of age, but with the mature-looking, shrivelled face, and sallow complexion of womanhood. Her parents stated, in reply to the usual question, that "her *courses had stopped*," and wanted to know if something could not be done to "bring her round." They said the child was eight years of age, and had been "regular" every month since she was five years old until two months ago. In reply to further questions, they said that a discharge of blood appeared regularly from the vagina, lasting three or four days; that she was uniformly in good health as other children until this suppression, since when she had become pale and listless, but retained her appetite for food. No examination of the genital organs was made; but the mammary glands presented no increase of development beyond what is common in children of her age. The expression of the eye and face, however, was that of established puberty. I am not aware that an authentic case of so early an appearance of menstruation (if this can be called such) has been recorded as occurring in a person of the white race.

Dr Keiller remarked that the case now related seemed to be an instance of so-called *menstruation*, but the evidence adduced was only that of the parents, and not that of Dr Hubbard, whose personal observation and opinion of the actual occurrence and character of the discharges would have been more satisfactory. He (Dr K.) was led to make this remark, not because he doubted the probability of the facts being as reported, but because it often happened that the statements of non-professional observers were not so correct as they ought to be; for example, not many months ago a child was brought to the Edinburgh Hospital for Sick Children, and was admitted under his (Dr K.'s) care, as a case in which, according to the mother's report, menstruation had for some time regularly taken place. This girl was only eight years old, and on admission presented no very obvious features of undue development. She remained in the hospital under close observation for some time, but no such symptoms as those referred to by her mother appeared, and it was reasonably doubted if anything like real menstruation had previously occurred. It could not be denied that bloody discharges occasionally took place from the utero-vaginal mucous membrane of young girls, or even of infants; but it by no means necessarily follows that such discharges were, or ought to be looked upon as *menstrual* in the proper sense of the term.

Dr Burn related a case of a child, seven years of age, who was said to have turned unwell. The mother believed it to be menstruation, which it was not, although it came from the vagina.

Dr Cuthbert said he had seen some children, two weeks old, where a bloody discharge had appeared from the vagina.

Dr Inglis mentioned the case of a girl, seven years of age, who had become exhausted from menorrhagia, which had continued for two years, terminating in tabes. There had been no ovulation. After death, the uterus and ovaries were found to be very small.

Dr Sidey mentioned a case of vicarious menstruation, when blood was vomited every month during pregnancy.

Mr Pridie stated the case of a girl, fourteen years of age, who never had menstruated before conception took place.

Dr Pattison stated that he knew a lady who had never menstruated. She married, and had no family.

II. RETROVERSION OF THE PREGNANT UTERUS. BY DR LORIMER, HADDINGTON. COMMUNICATED BY DR ZIEGLER.

I was called to see Mrs S. first on the 11th October 1855, in consultation with Dr Lothian. I found her in bed, with the look of great exhaustion and considerable emaciation; the abdomen much distended, evidently with fluid, and tender all over on pressure. The distention extended upwards to the præcordia, the bulk of the abdomen altogether resembling that of a woman in the eighth month of utero-gestation. Immediately above the pubis, and more especially towards the left side, the swelling had a thickened and doughy feeling, was more tender on pressure, and at one point, of the extent of the circumference of a shilling, was thinner than the adjoining parietes, and communicated a distinct sense of fluctuation. There was much general restlessness and feverish discomfort; the pulse 140, small and compressible; the tongue dry and partially covered with a brown fur; but no irritability of stomach. The bowels had been very irregular in their action, and had not been moved for two days prior to my visit. She passed urine only in very small quantities, without regulation or control on her part, and without any relief from the evacuation.

Mrs S. believed herself to be about three months pregnant. On inquiring into the history of these symptoms, Mrs S. mentioned, that that day four weeks (13th September) she had retired to bed in her usual good health; but about five o'clock next morning was awakened with a desire to make water, which she could not effect. Dr Lothian was sent for. Muriate of iron and other diuretics were administered, but without the desired effect. The abdomen began to enlarge, and has continued ever since steadily to increase, the urine coming away only in small quantities at a time, at irregular intervals, but always unproductive of relief. She has not been confined to bed, except of late; has occasionally driven out; the abdominal uneasiness has been increasing daily.

The history of the case necessitated a vaginal examination. On attempting to introduce the finger, it was at once met with what turned out to be a large fold of the posterior surface of the vaginal mucous membrane, forming a cul de sac, and preventing its farther progress. A little higher up, the finger got more free access to the passage. A dense solid body was found occupying the hollow of the sacrum and cavity of the pelvis, extending upwards under the arch of the pubis. No farther progress could be made in this direction at the time, from the projection of the bladder downwards. A *male* flexible catheter (the only instrument at hand) was therefore introduced into the bladder without difficulty, and 14 lb. of urine were drawn off, to the great relief of the patient and remarkable subsidence, although not disappearance, of the abdominal tumour. Towards the completion of the operation, the fluid became partially opaque, apparently from muco-purulent admixture. There was still much tenderness on pressure over the pubis. Another vaginal examination permitted the finger, high under the arch of the pubis, to come in contact with what appeared to be the posterior lip of the os uteri. The vesical tumour, as felt from the vagina, had disappeared; but the fold of the vaginal membrane still continued to protrude. The size of the uterine mass, fixed apparently in its abnormal position, led to the conclusion that Mrs S. was correct in supposing herself pregnant. A laxative enema was prescribed, and in the evening a large opiate,—the bladder to be attended to, and the strength supported. Next day (12th October), Mrs S. was easier, the bowels had been moved, and the bladder partially relieved by the use of the catheter.

I saw her again on the 13th October, with Dr Lothian. The abdominal distention and tenderness were again considerable; there was much febrile irritation and look of exhaustion. Dr L. had failed in introducing the catheter, or had not succeeded in evacuating the bladder. With some little difficulty this was now effected, and about 7 lb. of urine with muco-purulent admixture were drawn off. Temporary relief followed this. No change in the state of matters in the vagina. The uterine tumour was not exactly immovable, but no efficient or permanent change of position could be effected in it. A consultation with Dr Ziegler was proposed for next day, and readily assented to. This, accordingly, took place on the 14th October.

Dr Ziegler saw Mrs S. again on the 17th October. On both occasions he attempted, by careful and persevering efforts, to elevate the fundus uteri into its normal position; but, being foiled in both attempts, as a dernier resort he passed a uterine sound through the os into the cavity of the uterus, with the view of breaking up the ovum, exciting uterine action, and securing the expulsion of the fœtus. Frequent doses of ergot were administered subsequently to this operation; and, on the evening of Wednesday the 18th, a fœtus between the third and fourth months was expelled. In this process there could not have been much of decidedly *painful* uterine action, as the fœtus was expelled without any consciousness on the part of the mother, or knowledge on the part of her attendants. There was no hæmorrhage. The general and local symptoms were not alleviated in any respect by this change. On the subsequent day (the 19th October) very unequivocal indications of oppressed brain began to manifest themselves, and on the forenoon of the 20th she died.

Dr Ziegler was present at the inspection of the body on the 21st.

The appearances presented were:—Complete retroversion of the uterus; a fibrous tumour, about the size of a small orange, lodged in the posterior wall of the fundus; the bladder much enlarged, inflamed, thickened, sphacelated, and adherent to the abdominal parietes; and from its protracted and excessive distention (probably?) occasioning their absorption. At one point the thinning had come very near the external surface. This was the fluctuating point discovered on the first examination.

Dr Ziegler, after reading the above paper, urged the necessity of attending to the first symptoms of retention of urine in such cases.

Dr Charles Bell said it was the opinion of Marion Sims, that fibrous tumours frequently cause retroversion of the unimpregnated uterus. Dr B. thought that fibrous tumours were often mistaken for retroversion. He said that the greatest benefit resulted from the use of the sound in such cases, and that it was the introduction of that instrument by Sir James Simpson that laid the foundation of his fame. We were enabled to measure the depth of the uterus by the sound. It was also useful in assisting us to distinguish retroversion from fibrous tumours. Dr B. here stated the case of a patient, where there was retroversion in the early stage of pregnancy, but which was easily rectified in the usual way.

Dr Pattison said that the danger of retroversion was greater than craniotomy; as in the former 1 in 4 were fatal, and in the latter 1 in 5. He (Dr P.), quoting from Skinner, said that out of 63 cases of retroversion 15 mothers died, in each case the fœtus was lost; and 48 mothers recovered, and in 29 cases the fœtus perished.

III. CASE OF NECROSIS OF BONE IN A CHILD.

Dr Ziegler showed several pieces of necrosed bone which he had removed from a child's face. Evidence had existed, from a week old, that some local irritation and suppuration had been going on, till several pieces of the orbicular part of the superior maxilla were removed.

Part Fourth.

PERISCOPE.

PRACTICE OF MEDICINE.

THE TREATMENT OF CHOLERA. BY GEORGE JOHNSON, M.D.

Dr Whittle, in his interesting paper (*Medical Times and Gazette*, May 19, 1866) "On Bleeding in Cholera," after expressing a general concurrence with me in my theory of the disease, refers to certain points of theory and of practice with regard to which he differs from me. I am desirous to convince Dr Whittle and others that the difference between us is much less than he appears to imagine.

Dr Whittle doubts whether the vomiting in cholera is the result of an effort to expel the poison, and he intimates that this symptom may be occasioned by sympathy with some distant organ analogous to that which occurs in nephritis, in hydrocephalus, and in pregnancy. Now the objections to this explanation of the vomiting in cholera are, first, the negative fact that there is no evidence of irritation of any distant organ with which the stomach would be likely to sympathize in the manner supposed. Then there is the positive fact that during the progress of cholera a large amount of morbid secretions is poured into the stomach, and it seems reasonable to conclude that the act of vomiting is intended to expel these offensive materials. That these morbid secretions should have an emetic action appears so extremely probable that we have no need to explain the vomiting by an imaginary nervous sympathy.

But the most interesting part of Dr Whittle's communication is his statement that all stimulants, astringents, and opiates are injurious by *increasing* vomiting and purging; while, on the contrary, calomel stops the vomiting immediately, and after a few doses the purging. Now in the main I agree with this statement, but my explanation of the facts would be different from Dr Whittle's.

First, I should somewhat qualify the statement that opium *always* increases the purging; it sometimes abruptly stops the purging, but rarely without subsequent ill effects, such as profound collapse or consecutive fever. In many cases, however, opiates and astringents tend to increase and to prolong the purging. What, then, is the explanation of this? I know of no more probable explanation than this: that they tend to retain within the body a rapidly self-multiplying morbid poison, whose action is that of a strong purgative. What, then, is the *modus operandi* of calomel in quickly arresting the vomiting and purging? Dr Whittle appears to think that it has some specific sedative action. Now I venture to suggest that the following may be the true explanation. The calomel certainly does not act as a direct astringent; it does not prevent the escape of the morbid secretions from the digestive canal, but rather, by a stimulant action on the intestines, it quickens the expulsion of the offensive materials, and then the purging quickly ceases. This I believe to be the true explanation of the apparent anomaly, that opium acts as a purgative, and calomel or castor-oil as a sedative or an astringent. In both cases the action is indirect. The opium is indirectly purgative by retaining within the body a purgative morbid poison. The calomel or the castor oil is indirectly sedative or astringent by quickening the expulsion of irritating excreta.

The unexpected and apparently anomalous results of various remedies in cases of cholera admit of no satisfactory explanation if we ignore the existence of a morbid poison which, in all cases, tends to excite an eliminative secretion from the mucous membrane of the alimentary canal, and which in the more severe cases tends to obstruct the pulmonary circulation, and so to cause collapse. This arrest of blood in the lungs gives the explanation of the paradox, that during collapse venesection in suitable cases increases the volume and power of the pulse, while alcoholic stimulants have the opposite effect. Venesection lessens the distention of the right cavities of the heart, and so increases their contractile power. Brandy, on the contrary, appears to increase the distention, which results from the block in the lungs, and thus the contractile force of the right heart is diminished. Less blood, therefore, is transmitted to the left side of the heart, and the volume and force of the arterial pulse are lessened. Here, then, we have the apparent anomaly that during cholera collapse bleeding acts as a stimulant, and brandy as a sedative or depressant. Yet this apparent anomaly admits of a simple and intelligible physiological explanation. In the case of cholera, above all other forms of disease, a correct physiological interpretation of the symptoms is essential for successful treatment and for a correct estimate of the true influence of remedies.

In conclusion, I wish to offer a few additional remarks on the eliminative treatment of epidemic diarrhœa and cholera. And in doing so I beg to say that I am as fully conscious of the weighty responsibility which rests upon any one writing on this subject as is the author of the very able, temperate, and fair review of my book which has recently appeared in this journal. I am aware that many practitioners cannot think of giving a purgative to a sufferer from cholera without a feeling of dread. I am sure that this dread is mainly the result of an imperfect apprehension of what a purgative is intended to do and of what it actually does. The disease is usually attended with a profuse drain of fluid from the blood. To increase that drain would be mischievous, and might be fatal. A few doses of castor oil do not increase that peculiar excretion which constitutes the purging of cholera. I know that they do not, by actual observation, and if we look a little closely into the matter, we shall see that an ordinary purgative cannot have the effect which is so much dreaded. Let us consider for a moment the physiology of choleraic diarrhœa. A specific poison enters the blood. This is as nearly certain as any proposition in pathology can be. This poison acts as a ferment, and induces peculiar morbid changes in certain blood constituents. While these changes are going on there is often a general feeling of *malaise* and constitutional disturbance before there are any intestinal symptoms. At length, after a period varying from a few hours to four or five days, the morbidly changed blood materials are excreted through the mucous membrane of the alimentary canal. The cholera secretions have a disagreeable fishy odour, quite unlike that of any other morbid product; and there can scarcely be a doubt that the blood changes which result in the cholera stools are as peculiar and specific a product of the cholera poison as the blood changes induced by the smallpox poison and the consequent eruption are peculiar to that disease. Moreover, I maintain—and here I speak deliberately, and I am sure with reason on my side—I maintain that castor oil, or any other purgative passing through the intestinal canal, can no more increase the peculiar choleraic discharges than castor oil applied to the skin can increase the eruption of smallpox. To do either the one or the other the drug must increase the specific blood changes, and nothing can effect this but the specific poison of each disease. Opium, as we have seen, may *indirectly* increase the choleraic discharges by retarding the escape of the cholera poison, and so allowing it a longer time to work its destructive changes in the blood. No drug that we know of can directly bring about any such result. But it is sometimes said that an attack of cholera has directly followed the action of a purgative. This must have happened frequently, but it affords no proof that the purgative caused the attack. In such cases we may safely assume that the specific poison of cholera had entered the system, and the zymotic changes induced by it in the blood probably caused the feeling of derangement for which the purgative dose was taken.

What, then, is the object to be attained by emetics and purgatives in cholera? The object is to stimulate the stomach and intestines to eject their morbid contents, which otherwise might be retained and re-absorbed. There is reason to believe that the intestines are more tolerant of the morbid secretions than the bloodvessels are of their morbid contents. Choleraic diarrhœa is often painless; the morbid secretions have but little irritant action on the bowel, which sometimes becomes over distended and paralyzed by its accumulated contents, and still more frequently the choleraic secretions are but slowly and imperfectly discharged without the aid of some artificial evacuant. On these grounds, then, I maintain that the exhibition of such a purgative as castor oil—mild and unirritating, yet quick in operation—is not only a safe, but often, probably, a life-preserving practice.—*Medical Times and Gazette.*

TETANOID CONVULSIONS OVERCOME FOR A TIME BY APPLICATION OF ICE TO THE SPINE—DEATH—STRUMOUS MENINGITIS. UNDER THE CARE OF DR J. W. OGLE.

THE patient, Henry F., aged two years, was a stout, well-made child, of a family free from consumption or other special taint, and had cut fourteen teeth. He had been ailing, with want of appetite and dulness of manner, for eight or ten days, but had not complained of pain in any part. On 15th February he had a powder given to him of some kind or other, obtained at the druggist's. On the following night he slept well, but about 9 A.M. on the 16th he began to be attacked with convulsions, and about 11 o'clock he was brought to the hospital in a state of general convulsions, but affected chiefly on the right side of the body. At this time he was placed in a hot bath. Dr Ogle saw him at half-past 12 o'clock, when he was still convulsed; but then it was chiefly the left side that was affected—the left arm, hand, and leg, and the muscles of the face being violently convulsed, in a clonic manner. The eyelids were widely separated, and the eyeballs quite fixed and, to a slight degree, rolling from side to side. The pupils were larger than natural, but of equal size and unaffected by light. The tongue, which could not well be seen owing to fixing of the jaws, appeared to be clean. On touching the surfaces of the eyes or edges of their lids, but little reflex action could be produced. The surface of the body was much above the natural temperature, and the colour of the face was slightly, but manifestly, livid. The respiration was slow, and attended by a degree of moaning. Dr Ogle ordered an enema with castor oil and turpentine to be at once given, and the gums to be examined for the purpose of seeing if they required lancing. It was, however, found impossible to open the mouth. He then ordered an ice-bag to be applied and kept in close contact with the back the entire length of the spine. At two o'clock the convulsions were much the same, the right side being now mainly affected, the hands being clenched and the teeth firmly closed. The surface was warm; the head was frequently rolled from side to side on the pillow. The ice application was continued, and gradually the convulsions abated, and the child was considered by the apothecary well enough to be allowed to go home in the evening. The gums, etc., were found to be not swollen.

On the following day, as he was evidently not so well, the child was again brought to the hospital, under Dr Pitman's care, and grey powder was given at bedtime. Antimony and salines were also given. On the day after (the 18th) one convulsive seizure took place, affecting both sides of the body, and then the child appeared to be better, no feverish symptoms remaining. It was only noticed that the child had somewhat of a wild, rather staring expression of countenance, the pupils being rather dilated. Nothing further occurred until the morning of the 19th, when convulsions recurred, in which the child died.

On post-mortem examination, the brain was found much and universally congested, and the grey substance dark in colour. The pia mater was universally injected, and many miliary scrofulous deposits were found attached to its inner surface, especially in the great longitudinal fissure, and on the velum interpositum, and on the upper surface of the cerebellum. A small quantity of recent fibrine existed beneath the arachnoid at the inner side of each Sylvian fissure, the neighbourhood of the optic commissure and pons Varolii being almost free. The lungs contained about five or six small miliary scrofulous deposits; the heart, liver, and kidneys were natural; the spleen also contained a few scrofulous deposits.

Remarks.—In commenting upon this case, Dr Ogle drew attention to several points appearing to deserve notice. In the first place, the *spasm* which existed was such that, at the outset, seemed to have quite the character of tetanus, or of the convulsion produced by strychnia; and suspicion of the latter was the more strong at first when it was made known that the child had had some kind of powder exhibited previous to the setting in of convulsions; but as it was found on investigation that the convulsions did not occur until several hours afterwards, this suspicion fell to the ground, especially when it proved that the spasm was, to a consideral extent, *unilateral.* This unilateral character of the spasm was also most interesting, considering that, as it ultimately proved, the spasm was connected with a general state of meningitis. At first, owing to the absence of fever, the suddenness of attack, etc., Dr Ogle thought the case was one of mere congestion of the nervous centres; and indeed was even, after all, inclined to suppose that the early convulsions may have coincided with a simple state of congestion prior to the effusion or production of lymph, which, as it was subsequently ascertained, occurred within the cranium. If so, of course the formation of this lymph (considering how speedily death took place after the first symptoms set in) must have been very rapid; but Dr Ogle pointed out that a very few hours may suffice for the formation of such lymph and so-termed exudation. The substantial relief from the ice application was not a little interesting, and speculation upon the probability of a greater and more permanent benefit from a longer application of the ice could not be resisted. A noticeable symptom was the *lividity* of the face—one evidently connected with some pulmonary congestion. This symptom might have been thought to be the result of interference with the movements of the chest-walls by reason of spasm of the thoracic muscles; but as it was associated with a *slowness*, and at the same time *regularity*, of respiration, the juster inference was, that it was the result of some intra-cranial disturbance. The *dilated* state of the pupils Dr Ogle was more inclined to connect with the general strumous condition of the body than with the cerebral effusion, etc.—*Ibid.*

Part Fifth.

MEDICAL NEWS.

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

[In consequence of the great length to which the Minutes extend this year, we can only print a portion of them. In our next number, we shall give a general account of the proceedings of the Council.]

MINUTES OF MEETING, *Thursday, May* 17, 1866.

Present,—Dr Burrows, *President*, in the chair; Dr Alderson, Mr Cooper, Dr Acland, Dr Paget, Dr Embleton, Dr Storrar, Dr Alexander Wood, Dr Andrew Wood, Dr Fleming, Mr Syme, Dr Thomson, Dr A. Smith, Mr Hargrave, Dr Leet, Dr Apjohn, Sir D. J. Corrigan, Bart., Dr Sharpey, Dr Parkes, Dr Quain, Mr Rumsey, Dr Stokes. Dr Francis Hawkins, *Registrar*.

A note was read from Dr Christison, stating his great regret that imperative affairs in Edinburgh would render it impossible for him to be in his place at the meeting of the General Council, until Monday next.

Mr Cæsar Hawkins was introduced by Mr Cooper, as representative of the Royal College of Surgeons of England.

The President addressed the Council, and, after a brief survey of the most important subjects which had occupied the attention of the Council at its last General Meeting, and of some circumstances which had since occurred, informed the Council that he had for some time been in communication with the Secretary of State for the Home Department, and had received from him the draft of a bill for amending the Medical Acts, which he now laid before the Council.

The following Committees were appointed:—

Business Committee.—Dr Andrew Wood, *Chairman;* Dr Alderson, Dr Embleton, Dr Smith, Dr Alexander Wood, Mr Rumsey.

Finance Committee.—Dr Sharpey, *Chairman;* Mr Cæsar Hawkins, Dr Fleming, Dr Smith, Dr Quain.

1. Moved by Dr Alexander Wood, seconded by Dr Fleming, and agreed to,—"That a Committee be appointed to consider the amendment of the Medical Acts; the Committee to consist of Dr Andrew Wood, *Chairman*; Dr Alexander Wood, Mr Hawkins, Dr Paget, Dr Embleton, Mr Syme, Dr Apjohn, Dr Sharpey, Dr Quain, Dr Stokes."

2. Moved by Dr Storrar, seconded by Sir D. J. Corrigan, and agreed to,—"That the communication accompaning the draft bill from the Secretary of State be now read."

G. Burrows, M.D. Home Department, May 14, 1866.

Sir,—I am desired by Sir George Grey to say that Mr Thring has shown him a revised draft of the Medical Acts Amendment Bill, which seems to him not to be open to the objection which existed to the bill as it was at first framed. He would be glad if the Council would suggest the list of the Universities and Colleges to be inserted in the schedule. He does not feel able to undertake the charge of the bill at present, owing to the number of bills which the Government has before the House of Commons, the progress of which is delayed from day to day from the want of the opportunity of advancing them.

Some member of the House of Lords or Commons might be found by you who would take charge of it. It would be better, if possible, that it should be brought in in the Lords with a view to its progress.—I am, &c.

CHARLES MURDOCH.

G. Burrows, M.D. Home Department, May 17, 1866.

Sir,—I am desired by Sir George Grey to forward to you the draft of the Medical Acts Amendment Bill for the consideration of the Council, and to say that he hopes you will communicate to them his opinion on the subject as expressed in Mr Murdoch's letter of the 14th inst., which was unintentionally marked " Private."

The draft of the bill would have been forwarded to you yesterday, but a letter which was written on the subject got mislaid, and the mistake arising from its non-receipt was duly corrected this morning —I have, &c.

CHARLES LINDLEY WOOD.

3. Moved by Dr Storrar, seconded by Sir D. J. Corrigan, and agreed to,— " That the draft of the Medical Acts Amendment Bill be printed and circulated among the members of the Council."

4. Dr Acland laid before the Council the following memorial from the Physiological Sub-section of the British Association, assembled at Birmingham in 1865:—

" Having regard to the observations of the President, Professor Acland, in his inaugural address, the committee of the sub-section of physiology desire respectfully to intimate their opinion of the great advantage which would accrue to physiological (and thereby to medical) science, if the General Council of Medical Education and Registration should think fit, by pecuniary grants, and the appointment of suitable persons to undertake investigations into the physiological action of medicines.

" A few agents, when administered in poisonous doses, have alone been made the subjects of such research; and whilst the remedial effects of even such well-known agents as quinine have been admitted for ages, their modes of action are still unknown. Even to this moment our knowledge of the action of remedies rests only upon ordinary observation and general inferences.

" The committee is well aware of the extreme difficulty of prosecuting exact physiological inquiries in states of disease, and above all, of the necessity for devising new modes of investigation; but, bearing in mind recent researches of an analogous nature in health, they do not doubt there are physiologists and physicians of proved ability in such researches who would be able to devise the methods, and bring the results to a satisfactory conclusion. The committee also venture to suggest that no experiments should be regarded as satisfactory which (in addition to others) are not made on ordinary medicinal doses, in the diseases for the relief of which the remedies are administered (as well as in poisonous doses), and which are not performed with all the care and exactitude known in modern physiological research.

" That this resolution be signed by the President, Vice-President, and Secretaries, on the part of the committee, and that the President be requested to present it to the Medical Council of General Education and Registration.

" J. HUGHES BENNETT, J. VANDER HŒVEN, ALEX. FLEMING, WM. TURNER, HENRY W. ACLAND, JOHN DAVY, GEORGE ROLLESTON, EDWARD SMITH."

Moved by Dr Acland, and seconded by Dr Stokes,—" That the memorial from the Physiological Section of the British Association be received and entered on the minutes. That, in conformity with the suggestions of the memorialists, the sum of £250 be placed in the hands of a committee to be hereafter nominated. That it be an instruction to the committee to expend the whole or part of that sum in obtaining investigations or reports calculated to promote a precise knowledge of the efficiency of remedial agents, either of those heretofore esteemed to be of service, or of substances which the progress of science may point out as likely to be of value in the prevention or the treatment of disease."

Amendment moved by Sir D. J. Corrigan, and seconded by Dr Storrar,— " That the proposed investigation of the subjects referred to does not come within the province of the General Medical Council; nor, were it in its power, has it any legal authority to expend funds on such inquiry."

The amendment was carried; and having been put as a substantive motion, was agreed to.

MINUTES OF MEETING, *Friday, May* 18, 1866.

Dr Burrows, *President*, in the chair.

1. *Read*—The report of the committee on the subjects of general education deferred from last session:—" The committee on the subjects of general education having duly considered the subject remitted to them, resolve to recommend to the Council,—That after the year 1867, the examinations in subjects of general education be left entirely to the national educational bodies recognised by the Medical Council—the Council confining their regulations on general education to publishing a list of the examinations which may from time to time be approved of by them, it being understood that no certificate which does not affirm the proficiency of the candidate in Latin, and also his knowledge of the elements of geometry, and of the elements of mechanics and hydrostatics, be accepted. W. STOKES, *Chairman*."

Moved by Dr Andrew Wood, and seconded by Dr Parkes,—" That the report of the committee on general education be re-committed, and that the committee be instructed to take into consideration and report upon the examinations in general education at present conducted by the various national educational and other bodies recognised by the General Medical Council.

Amendment moved by Sir D. J. Corrigan, and seconded by Dr Leet,—" That after the year 1867, no certificate of examination in subjects of general education be recognised which does not include Latin and Greek, also a knowledge of the elements of Geometry and of the elements of Mechanics and Hydrostatics; and that a list of the examining national educational bodies authorized to conduct such examinations, and recognised by the General Medical Council, be published from year to year."

The amendment having been withdrawn, the original motion was put to the vote and agreed to.

3. *Read*—The following communication from the Director-General of the Medical Department of the Navy, with returns of the examinations of candidates:—

Dr F. Hawkins. Admiralty, W.C., 21st February 1866.

Sir,—With reference to your letter of the 27th of May 1864, I have the honour to forward, for the information of the General Council of Medical Education and Registration of the United Kingdom, a report from the Board of Examiners on the examinations of candidates for medical commissions in the Royal Navy during the year 1865.—I have, &c. A. BRYSON, *Director-General.*

Dr Bryson, C.B. Admiralty, Somerset House, 14th February 1866.

Sir,—We have the honour to acquaint you, for the information of the General Council of Medical Education and Registration of the United Kingdom, that during the year 1865 twenty-one candidates presented themselves for examination for commissions as assistant-surgeons in the Royal Navy.

2. Of these four had been previously examined and rejected, and one underwent two examinations during the twelve months, having been unsuccessful on the first occasion.

3. Of the total number of candidates who presented themselves, twelve were successful and were admitted into Her Majesty's service, and nine having failed to satisfy us as to their professional knowledge were rejected.

4. Of the twelve successful candidates five passed good examinations, two moderately good examinations, and five indifferent examinations.

5. Of the five candidates who were twice examined two passed good examinations on the second occasion, and three were again rejected.

6. The majority of those rejected were utterly ignorant of the Latin language, two failed altogether in Anatomy and Surgery, and two were so ignorant of Materia Medica, that it would have been dangerous to have passed them as qualified.

7. The accompanying list supplies the information requested by the Medical Council with reference to the qualifications of the candidates, and the points on which they were chiefly deficient.

8. Appended to our letter to you of the 6th of March 1865, reporting on the examination during the previous year, was a list of the subjects on which the candidates had at different times been examined, and which we stated when put in the interrogative form, gave a fair idea of the general character of the questions put to the candidates. As the nature and scope of the examinations in no respect differed during the year 1865, we do not consider it necessary to forward another list herewith.

9. In renewing our expressions of regret, that so much ignorance of the Latin language should be displayed by a large proportion of the candidates who submit themselves for examination, we are sorry to have to add that many of the manuscripts sent in by the candidates have given evidence of such an ignorance of orthography, and of the most ordinary rules of English grammar and composition, as could hardly have been credited in members of a liberal profession.—We have, &c.

E. HILDITCH, *Inspector-General.*
JOHN SALMON, *Deputy Inspector-General.*
WM. R. SMART, *Deputy Inspector-General.*
ALEX. E. MACKAY, M.D., *Deputy Inspector-General.*

Qualifications, according to Schedule (A), *of the different Candidates who were examined for Medical Commissions in the Royal Navy in* 1865, *with the Results of the Examinations.*

1. Lic. R. Coll. Phys. Lond., and Mem. R. Coll. Surg. Edin. Passed an indifferent examination.
2. Lic. R. Coll. Phys. Edin., and Lic. R. Coll. Surg. Edin. Rejected, second examination. Latin examination bad; Anatomy indifferent; Surgery bad.
3. Mem. R. Coll. Surg. Eng., and Lic. Soc. Apoth. Lond. Passed, second examination. A good examination in all branches.
4. Mem. R. Coll. Surg. Eng., and Lic. Soc. Apoth. Lond. Rejected, second examination. Surgery only fair; deficient in all other branches excepting Anatomy.
5. Lic. R. Coll. Surg. Irel. Passed an indifferent examination.
6. M.B. Univ. Aberd., and Mast. Surg. Univ. Aberd. Passed an indifferent examination.
7. Lic. R. Coll. Surg. Irel. Rejected. Utterly ignorant of Latin; manuscript bad.
8. Lic. F. Phys. Surg. Glasg., and M.D. Univ. Glasg. Passed a moderately good examination.
9. M.D. Univ. Aberd., and Mast. Surg. Univ. Aberd. Passed a good examination in all branches.
10. Lic. R. Coll. Phys. Edin., and Lic. R. Coll. Surg. Irel. Passed a moderately good examination.
11. Mem. R. Coll. Surg. Eng., and Lic. Soc. Apoth. Lond. Passed an indifferent examination.
12. Mem. R. Coll. Surg. Eng., and Lic. Soc. Apoth. Lond. Rejected, second examination. Utterly ignorant of Latin.
13. Lic. F. Phys. Surg. Glasg. Rejected. Utterly ignorant of Latin; manuscript bad.
14. Mem. R. Coll. Surg. Eng., and Lic. Apoth. Hall, Dubl. Passed a good examination in all branches.

15. Lic. K. & Q. C. Phys. Irel., Lic. R. Coll. Surg. Irel., and Lic. Mid. K. & Q. C. Phys. Irel. Rejected. Deficient in Anatomy, Surgery, and Latin; manuscript indifferent.

16. Mem. R. Coll. Surg. Irel. Rejected. Utterly ignorant of Latin; manuscript bad.

17. Mem. R. Coll. Surg. Eng. Rejected, first examination. Deficient in Chemistry, Materia Medica, Midwifery, and Botany. Passed, second examination: a good examination in all branches excepting Surgery, which was fair.

18. Lic. R. Coll. Phys. Lond., Mem. R. Coll. Surg. Eng., Lic. Soc. Apoth. Lond., and M.D. Univ. St And. Passed an indifferent examination.

19. Mem. R. Coll. Surg. Eng., and M.B. Univ. Edin. Passed a good examination.

20. Mem. R. Coll. Surg. Eng. Rejected. Utterly ignorant of Latin.

21. Lic. R. Coll. Surg. Irel., and Lic. Apoth. Hall, Dubl. Rejected. Deficient in Chemistry, Materia Medica, Midwifery, and Botany.

4. Read—The following communication from the Under-Secretary of State for War:—

The Registrar. 26th May 1865.

Sir,—I am directed by the Secretary of State for War to acknowledge the receipt of your letter of the 24th ult., forwarding a resolution of the Medical Council, modifying their previous one of the 6th May 1864, in which it was stated, "that it is the opinion of the General Council that the several medical qualifications which Army surgeons possess might be entered after their names in the Army List," and substituting a new resolution, in which it is stated that the General Medical Council "are of opinion that initials, indicating the several medical qualifications which Army surgeons possess, should be inserted after their names, without distinction or preference to one degree or license over another, each surgeon, when he possesses more than one medical qualification, having, however, only one medical qualification appended to his name."

In reply, I am to request that you will solicit the Medical Council to favour Lord de Grey with their opinion as to the particular *initials* which should be used to designate the several medical qualifications described in the table appended to the Medical Act, and for which abbreviations are therein laid down. For example, Licentiates of the King and Queen's College of Physicians of Ireland, in the table of abbreviations appended to the above-named Act, are thus described: "Lic. K. Q. Col. Phys. Irel." What initials should be used in this and similar cases?

In the case, also, of a surgeon who possesses more than one medical qualification, the Council is requested to specify which should be selected for insertion in the Army List?

Suppose, for illustration, a Licentiate of the King and Queen's College of Physicians, Dublin, is also a Doctor of Medicine of the University of Edinburgh, or a Member of the London College of Physicians, or a Licentiate of the Society of Apothecaries; which of these medical qualifications is to have the precedence, and by whom is this to be decided?—I have, &c.

EDWARD LUGARD.

Moved by Sir D. J. Corrigan, seconded by Dr Sharpey, and agreed to,—"That the communication from the Under-Secretary of State for War be entered on the minutes, and that it be referred for consideration to a committee, consisting of the following:—Sir D. J. Corrigan, *chairman*, Dr Alexander Wood, and Dr Embleton.

MINUTES OF MEETING, *Saturday*, *May* 19, 1866.

Dr Burrows, *President*, in the Chair.

1. The Registrar informed the Council that Mr William Adams, whose name had been omitted from the *Medical Register* in consequence of an erroneous

report of his death, request the General Council to direct that his name be restored to the Register.

Moved by Mr Hargrave, seconded by Mr Cooper, and agreed to,—"That the Council direct that the name of Mr William Adams be restored to the *Medical Register*."

2. Read—The following petition from Mr Richard Organ, which had been received at the close of the last session, too late to be submitted to the Medical Council:—

Cawood Selby, Yorkshire, April 15, 1865.

Gentlemen,—I beg most respectfully to lay before you a true statement of my unfortunate position, trusting, when you have perused the same, and seen the testimonials I have to produce, you will kindly reconsider your decision of last year, and allow me the opportunity of retrieving the past (*for which I am truly sorry, and striven hard to amend*) by allowing me to present myself at one of the Examining Boards, to endeavour to legally qualify, which is my most earnest wish. I am, gentlemen, most heartily sorry for the manner in which I acted when called before you; I was wrongly advised from the first, and have had to suffer most bitterly in consequence of my imprudence, and I pledge my word, that no member of the profession shall have cause of complaint against me for the future.

I was born at Dursley in Gloucestershire, in July 1824. My father, who was a bacon factor, wished me to follow his business, but my ambition was the medical profession; this was strongly opposed by him, and when I became a pupil, I had to pay the premium out of my pocket money saved from year to year. I duly served five years (as seen by certificate marked A), and from that time fought my way in the world without pecuniary assistance from home till the present.

On the 1st of August, 1851, I became an assistant to Mr Wightman, M.R.C.S., L.S.A., of this place, and acted as such for five years. Mr W. then decided removing, and when about to leave, a public meeting was called, and one thousand pounds was raised for me to purchase the practice (this was done, as enclosed transfer marked B will show), the parties being satisfied to take merely a note of hand for that large sum. I have, gentlemen, since my name was removed from the register, attended all lectures and hospital practice required by the different Examining Boards, *travelling weekly by night* to and from London to accomplish the same. I have also striven to act as I ought to all the members of the medical profession, and Mr Hare, M.R.C.S., L.S.A., of this place, has kindly allowed me to use his name as a reference to the truth of this statement.—Anxiously awaiting your reply, I am, etc.,

RICHARD ORGAN.

Moved by Dr Alexander Wood, seconded by Dr A. Smith, and agreed to,—"That on a review of the case of Mr Richard Organ the Council decline to accede to his petition."

MINUTES OF MEETING, *Monday, May* 21, 1866.

Dr Burrows, *President*, in the Chair.

2. Moved by Dr Andrew Wood, seconded by Dr Parkes, and agreed to,—"That the Standing Order No. 5, 'Order of Business,' be suspended, and that the Report of the Committee on Amendment of the Medical Acts be the order of the day for Tuesday, May 22d, and take precedence of other business."

Dr Andrew Wood gave in the following Report of the Committee on the draft of the Medical Acts Amendment Bill, transmitted from the Home Office:

REPORT.

The Committee according to the Resolution of the Council have carefully considered the Medical Acts Amendment Bill as drafted at the Home Office, which is to the following effect:—

MEDICAL ACTS AMENDMENT BILL.

Draft of a Bill to Amend the Acts relating to Practitioners in Medicine and Surgery.

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

PRELIMINARY.

I. *Construction and Short Titles.*—The Acts described in the Schedule to this Act and this Act shall be construed together as one Act; and for that purpose the expression "this Act," when used in The Medical Act (of the Session of 1858), shall include the present Act; and the Acts described in the Schedule to this Act and this Act may be cited together as "the Medical Acts," and are comprised in that expression when hereafter used in this Act; and this Act may be cited separately as the Medical Acts Amendment Act, 1866.

MEMBERS OF COUNCIL.

II. *Amendment of Sect.* 7 *of Act of* 1858.—Section VII. of the Medical Act (1858) shall be read and have effect as if the words "qualified to be" were omitted therefrom.

REGISTRATION.

III. *Erasure by Order of Council.*—Where, under authority of the Medical Acts, the General Council or any Branch Council direct the erasure of the name of any person from any Register, the name of that person shall not be again registered in any Register except by direction of the Council which directed the erasure, or by order of a court of competent jurisdiction.

IV. *Restoration of Name.*—If the General Council think fit in any case they may direct any Registrar to restore to his Register any name erased by him therefrom, and the Registrar shall restore the same accordingly.

V. *Repeal of Sect.* 14 *of Act of* 1858.—Section XIV. of the Medical Act (1858) is hereby repealed, but this repeal shall not affect the past operation of that section, or anything already done under it, or invalidate any existing Register, Order, or Regulation kept or made under it, or affect any proceeding or thing commenced under it, or the power of the General Council to make any order in relation thereto; and every such proceeding or thing may be carried on and done as if the said section had not been repealed.

VI. *Registers to be corrected.*—Each Registrar shall keep his Register correct in accordance with the provisions of the Medical Acts and the general Regulations and special directions of the General Council (whether made or given before or after the passing of this Act).

VII. *Erasure on Death.*—Each Registrar shall erase from his Register the name of person deceased.

VIII. *Alteration of Address, etc.*—Each Registrar shall from time to time insert in his Register any alteration in the address or qualification of any person registered.

IX. *Evidence of Death, etc.*—In the execution of the aforesaid duties, each Registrar shall act on such evidence as in each case appears to him sufficient, subject to any Regulations of the General Council.

X. *Erasure on ceasing to practise.*—Each Registrar may erase from his Register the name of any person who has ceased to practise; and in order to the execution of that duty, each Registrar may send by post to any person registered in his Register a letter, addressed to that person according to his registered address, inquiring whether or not he has ceased to practise, and if the Registrar does not, within *three months* after sending such a letter, receive any answer thereto from the person to whom it is sent, he may, within *fourteen days* after the expiration of the said period of *three months*, send by post to that person another registered letter, addressed to him according to his registered address, referring to the first letter and stating that any answer thereto has not been received by the Registrar, and if the Registrar does not within *three months* after sending such second letter receive any answer thereto from the person to whom it is sent, that person shall, for the purpose of the present section, be deemed to have ceased to practise; and the name of any person shall not (without his consent) be removed from the Register on the ground of his having ceased to practise, except in pursuance of the provisions of the present section. Provided that a person whose name has been erased from the Register with his consent on the ground of his having ceased to practise, shall not be liable to any penalty under this section by reason of his being engaged gratuitously in the cure or treatment of any disease or injury.

XI. *Registration of Foreign and Colonial Practitioners.*—Every person shall be entitled to be registered under the "Medical Act, 1858," who is qualified as follows:—*First*, Is at the time at which he applies to be so Registered legally possessed either of one of the qualifications described in Schedule (B)[1] of this Act, or of some other foreign or colonial diploma, obtained in the opinion of the General Council after such course of study and such examination as guarantee to their satisfaction the possession by the applicant of sufficient knowledge and skill for the efficient practice of Medicine and Surgery. *Secondly*, Has resided in the United Kingdom for a period of not less than twelve months immediately previous to making his application. *Thirdly*, Has not been guilty of any offence which according to the laws of the country to which he belongs would disentitle him to practise Medicine and Surgery, or which, according to the "Medical Act, 1858," would enable the General Council to strike his name off the Register.

XII. *Privy Council may add to list of Qualifications.*—If it appears to the Privy Council, on the representation of the General Council, that any qualification other than those described in Schedule (A) to the "Medical Act, 1858," and in Schedule (B) to this Act is granted by any University, College, or body in the United Kingdom or elsewhere, after such a course of study and such examination as guarantee to the satisfaction of the General Council and Privy Council that any person to whom such qualification has been granted possesses the requisite knowledge and skill for the efficient practice of Medicine and Surgery, it shall be lawful for the Privy Council (in the case of any qualification granted by any University, College, or body in the United Kingdom) to direct by Order that every person holding such qualification shall be entitled to be registered under the "Medical Act, 1858," in the same manner and with the like effect as if the qualification were described in the Schedule (A) to the "Medical Act, 1858," and (in the case of any qualification granted by any University, College, or body elsewhere than in the United Kingdom) to direct by Order that every person holding such qualification shall be entitled to be registered under the "Medical Act, 1858," in the same manner and with the like effect as if the qualification were described in the Schedule (B) to this Act.

XIII. *Application of Provisions* XX., XXI., XXII., *of the Medical Act of* 1858.—The provisions contained in Sections XX., XXI., XXII. of the "Medical Act, 1858," shall apply to any qualification which, in pursuance of this Act, entitles persons to be registered under the "Medical Act, 1858."

XIV. *Degree of Bachelor of Surgery to be a Qualification.*—The degree of Bachelor of Surgery conferred by the University of London shall, for the purpose of enabling any person to be registered under the "Medical Act, 1858," be deemed to be one of the qualifications described in Schedule (A) of that Act.

UNREGISTERED PERSONS.

XV. *Repeal of Sect.* XL. *of Act of* 1858.—Section XL. of the Medical Act (1858) is hereby repealed; but this repeal shall not apply to or in respect of any offence committed before the passing of this Act, or affect any proceeding pending at the passing of this Act.

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[1] Schedule (B) includes the diplomas of certain eminent foreign and colonial Schools of Medicine.

XVI. *Penalty for the Assumption of Titles, etc., by unregistered Persons practising Medicine or Surgery.*—If any person practising Medicine or Surgery, or engaged in the cure or treatment of diseases or injuries, not being registered under the Medical Acts, takes or uses any of the designations enumerated in Schedule (A) to the Medical Act (1858), as amended by Schedule (B) to this Act, or by any other of the Medical Acts, or the designation of Physician, Surgeon, Doctor of Medicine, or Apothecary, or any other designation used by or used to distinguish duly qualified practioners of Medicine or Surgery, or any class thereof, or the designation of Professor of Medicine or of Professor of Surgery, he shall for every such offence be liable on summary conviction to a penalty not exceeding £20.

SAVING.

XVII. *Extension of Savings to former Acts.*—Nothing in this Act shall prejudically affect any occupation, trade or business, rights, privileges, or employment expressly saved from the operation of the Medical Act (1858), or affect the rights or interests of any person or class of persons expressly exempted or protected by any provision of any of the Acts described in the Schedule to this Act.

The Committee having fully considered the Bill and compared it with that which was drafted during the last session of the General Medical Council, beg leave to submit the following Report:—

The Bill of the Home Office embraces substantially, indeed, almost entirely, the Bill of the Council, with, however, some important additions and alterations which require specific notice.

1. THE PREAMBLE.—The Council's Draft Bill commenced with the following preamble: "Whereas the Medical Act, 1858, has been found ineffectual to enable persons requiring Medical Aid to ascertain who are qualified practitioners, etc." This preamble, which the Home Office draft leaves out, the Council considered important as pointing out the fact that the Medical Act, 1858, had failed to carry out efficiently the object stated in the preamble to that Act, viz: "That persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners," and thus proving the necessity for an Amendment of that Act.

The Committee are of opinion that if there be no valid reasons against its being retained, it would be desirable that it should form part of the proposed Bill.

2. THE REGISTRATION CLAUSES.—The object of the clause as to Registration proposed in the Council's draft Bill, was to facilitate the duty of the Registrars in keeping their Registers correct, to enable persons who, having ceased to practise, may desire it, to have their names erased from the Register; to render it imperative on the Registrar to address to any registered Medical Practitioner (instead of one letter within six months, as in the Medical Act, 1858) two letters within six months, at an interval of three months, inquiring as to change of residence, before erasing his name from the Register, and to prevent any person who has been once erased from the Register from being re-registered without the instruction of the General or Branch Councils.

In the Home Office Bill this clause has been substantially adopted, though the phraseology has been somewhat varied, and the clause has been subdivided for convenience into eight clauses. The Home Office Bill contains, however, two additions requiring mention, viz.:—I. The Council's Draft Bill provided that when the name of any person shall have been erased from the Register by the General Council or any Branch Council, it shall not again be registered in any Register, except by direction of the Council which directed the erasure. The Home Office Bill adds the words, "or by order of a court of competent jurisdiction." The Committee see no objection to this addition; for the Council may thus feel assured that the substantial justice of every case in which they have to exercise the right which they possess of erasure from the

Register is guaranteed by the right of appeal to a competent court of justice. II. The Council, in their clause, had provided that the Registrar should address to any registered medical practitioner *two* letters within six months, at intervals of three months, inquiring as to whether he had ceased to practise, or had changed his residence, before erasing his name from the Register. The Home Office clause diminishes still further the chance of any mistake, by providing that the letters to be addressed by the Registrar shall be *registered* letters; and that the second letter shall be addressed within fourteen days after the expiration of the first three months.

3. NEW CLAUSES AS TO REGISTRATION OF FOREIGN AND COLONIAL PRACTITIONERS.—The Home Office Bill embraces three new Clauses (XI., XII., XIII.), which provide for the registration of foreign and colonial practitioners, under certain conditions; these conditions being (1.) That only those foreign and colonial diplomas and degrees shall be registered which have received the sanction of the General Medical Council, and shall be included in a new Schedule entitled Schedule (B), which the General Council have been requested by the Home Office to prepare. (2.) That the provisions contained in Sections XX., XXI., XXII. of the Medical Act, 1858, shall apply to all qualifications contained in the Schedules to the proposed Bill; that is to say, that the Council, if they do not consider the course of study and examinations to be gone through in order to obtain any such qualifications sufficient, shall be entitled to represent the same to the Privy Council, who shall have power to suspend the right of registration. (3.) That no qualification, whether British, foreign, or colonial, other than those included in Schedules (A) and (B) in the proposed Bill, shall be entitled to registration unless by order of the Privy Council, on the representation of the General Medical Council. (4.) That no person shall be registered upon any foreign or colonial diploma or degree who has not resided in the United Kingdom for a period of not less than twelve months immediately previous to his making his application for registration.

The Council are aware, that though there was power in the Council to register, if they saw fit, persons holding only foreign or colonial diplomas and degrees—provided they had obtained them previously to the passing of the Medical Act, 1858,—yet that they had no power to register any such diplomas and degrees obtained after the passing of that Act. The Committee consider it fair and right that some provision should be made for the registration of foreign and colonial diplomas and degrees (especially if registration be rendered indispensable for practice under recognised Medical titles), as it would be a harsh measure to deny the privilege of registration in this country to persons who may come from abroad or from the colonies holding foreign or colonial diplomas or degrees, provided these qualify for practice in the countries where they have been granted, and are deemed deserving of recognition by the General Medical Council, as implying education and examination not inferior to the minimum required in the case of qualifications granted in the United Kingdom. The Committee are quite alive to the pertinent objection which may be made to the registration of foreign and colonial diplomas and degrees, on the ground that the Council have no means of supervision and visitation of the bodies granting them—a supervision and visitation which they have the right to exercise, and which they do in fact exercise, over the British licensing bodies. Again, it might be suggested that were facilities to be granted by the licensing bodies in this country for foreign and colonial practitioners, by means of a modified practical examination, obtaining British qualifications, the object contemplated in the Home Office clauses might be more legitimately gained. This, the Committee understand, would be objected to by the Home Office. The Committee, on the whole, would recommend that—the objections stated notwithstanding—under the conditions contained in the Home Office clauses, the Council should accept these clauses, especially as they are given to understand that the insertion of them is a *sine qua non* to the support of the Bill by the Government.

In the Home Office Bill a new Schedule (B) is proposed to be introduced, for the purpose of including those foreign and colonial degrees and diplomas which are to qualify for Registration. The duty of preparing this Schedule has, as already stated, been committed to the Council by the Home Office. The Committee have felt the difficulty of the task, from want of information as to the conditions under which the majority of foreign and colonial degrees and diplomas are granted; and whilst presenting, for the approval of the Council, the following list, they beg leave to state that they have deemed it expedient to specify, in the first instance, only certain foreign and colonial Bodies, which grant adequate qualifications. Under the Bill it will be quite competent for the Council, from time to time, to add to or amend the list with the consent of the Privy Council. With these remarks the Committee propose that Schedule (B) should include Medical and Surgical qualifications granted by the following foreign and colonial Bodies, viz.:—The Universities of Paris; Berlin; Vienna; Copenhagen; Stockholm; New York; Philadelphia; Harvard University, Boston; M'Gill University, Montreal; University College, Toronto; Queen's University, Kingston, Canada; Laval University, Quebec; University of Calcutta; University of Bombay; University of Madras.

Whilst the Committee have done their utmost to meet the wishes of the Government in framing a Schedule (B), they consider that a preferable plan would be to make a provision in Clause XII. of the proposed Bill, by virtue of which it shall be lawful for the General Medical Council annually to prepare and submit to the Privy Council, for approval, a list of those foreign and colonial qualifications which, from time to time, the General Medical Council may consider worthy of recognition;—this list to be published in the *Gazette* and in the *Medical Register*.

4. REGISTRATION OF THE DEGREE OF BACHELOR OF SURGERY OF THE UNIVERSITY OF LONDON.—The Committee see no reason why the degree of Bachelor of Surgery, of the London University, should not be included in Schedule (A).

5. THE PENALTY CLAUSE.—This important clause, as framed by the General Council last year, has been substantially adopted in the Home Office Bill. There is only one important point requiring notice, viz.: that instead of the word "Doctor," as in the Council's draft Bill, the words "Doctor of Medicine" have been used in the Home Office draft Bill. The Committee believe that the effect of this alteration is materially to weaken the clause; as, if it be retained, unqualified persons will continue as now to practise Medicine, calling themselves "Doctors," but not "Doctors of Medicine," and will thus evade the penalties. It might be said that by using the word "Doctor" only you include all doctors, whether of Philosophy, Law, etc. The answer to this is, that it is only those who, not being registered, are "practising Medicine under the title of Doctor," who are affected by the clause. The Committee would advise the Council to represent this matter very specially to the Home Office.

The Committee believe that the Home Office Bill, with the amendments suggested by them to be adopted by the Council, would prove a salutary amendment of the Medical Act; one calculated to benefit the medical profession, but especially the public for whose protection from unqualified practitioners it makes more efficient provision. They therefore trust that the Council will adopt it, and will, before the conclusion of the present session, send a Deputation to the Home Office to state the views of the Council regarding the Bill; and further, to urge on the Government the expediency of the Bill being introduced as a Government measure. ANDREW WOOD, *Chairman*.

Moved by Dr Andrew Wood, seconded by Dr Embleton, and agreed to,—"That the Report of the Committee on the Draft Bill of the Home Office for the Amendment of the Medical Acts be received and entered on the minutes."

MINUTES OF MEETING, *Tuesday*, *May* 22, 1866.

Dr Burrows, *President*, in the Chair.

2. Dr Quain gave in the following Report of the Pharmacopœia Committee:—

REPORT.

The Pharmacopœia Committee have to report, that since the date of their last report, Messrs Redwood and Warrington have continued to be engaged in the duty assigned to them; and they have so far completed their work, that the whole of the matter, with the exception of the appendix, is now in type. The committee have reason to hope that the volume will be ready for circulation, in proof, amongst the Members of Council in three months from the present time. Under these circumstances, the committee beg leave to direct the attention of the Council to the resolution adopted at the meeting of last year, as follows:—"That it is desirable to have a proof copy of the new 'Pharmacopœia' in the hands of the members of the General Medical Council, at least one month before the meeting of the Medical Council, at which the opinion of the Medical Council is to be given relative to its being published, in order to afford to each member of Council the opportunity of making such suggestions to the committee as may appear desirable."

As the committee anticipate that the work will be ready some considerable time before the next ordinary General Meeting of the Council, the committee would wish to receive such farther directions as the Council may feel it necessary to give them on this subject. The committee, before concluding their report, desire, in reference to an impression which seems to prevail, that some unnecessary delay has taken place in the production of the "Pharmacopœia," to assure the Council that no time has been spent in the work which was not necessary.

The committee beg to inform the Council that they have not hitherto had occasion to draw upon any portion of the funds placed at their disposal by order of the Council.—May 21, 1866. R. CHRISTISON, *Chairman*.

MINUTES OF MEETING, *Wednesday*, *May* 23, 1866.

Dr Burrows, *President*, in the Chair.

This day's meeting was entirely occupied by the consideration of the Medical Acts Amendment Bill.

MINUTES OF MEETING, *Thursday*, *May* 24, 1866.

Dr Burrows, *President*, in the Chair.

This meeting was occupied by the consideration of the draft Medical Act Amendments Bill, and the subject of the registration of Medical Students.

MINUTES OF MEETING, *Friday*, *May* 25, 1866.

Dr Burrows, *President*, in the Chair.

Moved by Dr Andrew Wood, seconded by Dr Parkes, and agreed to,—"That the returns of examinations from the Army Medical Department be received and entered on the minutes."

F. Hawkins, Esq. Army Medical Department, May 23, 1866.

Sir,—In acknowledging the receipt of your letter dated 18th instant, and with reference to former correspondence relative to the number of candidates who have presented themselves for examination, and to the points upon which the Council of Medical Education request information to be furnished annually, I have the honour to forward a statement of the number of candidates examined for this department during the year 1865, and a list of the questions proposed by the Examiners.

I beg to add that the general nature and scope of the examination has not been altered since my last communication, of February 23, 1865, on this subject.—I have, &c. J. M. Gibson, *Director-General.*

Statement of the Degrees, Diplomas, and Licenses of the Candidates for Commissions in the Medical Department of the Army, who during the year 1865 *have presented themselves for Examination, showing the number that passed, and did not pass, distinguishing the Qualifications, both Medical and Surgical, under the heads of the several Licensing Bodies.*

Names of the several Licensing Bodies.	Total Qualifications.	No. passed.	Failed.
Royal College of Physicians, London	1	1	...
Royal College of Physicians, Edinburgh	28	12	16
King and Queen's College of Physicians, Ireland	16	10	6
Royal College of Surgeons, England	24	16	8
Royal College of Surgeons, Edinburgh	13	11	2
Royal College of Surgeons, Ireland	38	21	17
Society of Apothecaries, London	12	10	2
Apothecaries' Hall, Dublin	2	...	2
Doctor of Medicine, University of Edinburgh	6	6	...
Doctor of Medicine, Queen's University, Ireland	13	11	2
Master of Surgery, Ditto	1	1	...
Doctor of Medicine, University of Dublin	1	1	...
Bachelor of Medicine, Ditto	6	2	4
Master of Surgery, Ditto	6	2	4
License in Medicine, Ditto	1	1	...
Doctor of Medicine, St Andrew's	1	1	...
Doctor of Medicine, University of Aberdeen	1	1	...
Bachelor of Medicine, Ditto	4	4	...
Master of Surgery, Ditto	4	4	...
Doctor of Medicine, University of Glasgow	2	1	1
Master of Surgery, Ditto	2	1	1
Total	182	117	65

Candidates.		*Diplomas and Degrees.*	
Successful	56	Successful[1]	118
Failed	33	Failed	62
Total	89	Total	180

Minutes of Meeting, *Saturday, May* 26, 1868.

Dr Burrows, *President*, in the Chair.

This meeting was occupied by the consideration of some points with reference to the "Pharmacopœia."

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[1] Four candidates held three qualifications each.

MINUTES OF MEETING, *Monday, May* 28, 1866.

Dr Burrows, *President*, in the Chair.

2. Moved by Dr Alexander Wood, seconded by Mr Syme, and agreed to unanimously:—"1. That the reports of the visitations of examinations be received and entered on the minutes.[1] 2. That the General Medical Council, on the first occasion on which they have received Reports on the examinations of candidates for diplomas and licenses, do not think it expedient to do more than direct a copy of the Reports to be transmitted to each of the bodies in Schedule (A) to the Medical Acts."

By request of the President, Dr Alderson took the chair.

3. Moved by Dr Andrew Wood, and seconded by Dr Thomson,—"That the visitations of the examinations, preliminary as well as professional, of the qualifying bodies, by the Branch Councils, or such of their members as they may depute, be continued during the ensuing year. That the reports of the visiters shall apply to every part of the examinations of each body, and shall include a statement of the facts observed, and of the opinions of the visiters as to the efficiency of the examinations, as also such remarks and suggestions on defects in them as circumstances may indicate. That the Reports of the visiters be submitted in the first instance to the Branch Councils; and that thereafter the Branch Councils shall direct them to be printed and circulated confidentially amongst the members of the General Council, so that they may be in a condition at the meeting of the General Council in 1867 to consider them maturely."

Amendment moved by Sir D. J. Corrigan, and seconded by Dr A. Smith,—"That visitation of examinations carried out by members of the General or Branch Medical Councils being a reciprocal visitation by the representatives of the several licensing bodies of one another's examinations, is faulty in principle, and therefore can never command confidence. That any visitation of examinations would be worthless which did not include every examination, inasmuch as partial visitation could only testify as to the actual examinations visited—necessarily a very small proportion—and be no evidence whatever of the character of the examinations not visited, the larger proportion; that visitation of every examination would be impracticable, inasmuch as, in addition to preliminary examinations, there are annually about three thousand five hundred professional examinations in the United Kingdom for degrees or licenses."

The amendment was negatived, and the original motion agreed to.

4. Dr Embleton presented the Report of the Committee on Returns of Examinations and their results from the licensing bodies, and on the Register of Medical Students for the year 1865.

Report of the Committee on Returns of Professional Examinations and their results, from the Licensing Bodies, and on the Register of Medical Students for the year 1865.

The Committee beg leave to lay before the Council:—

1. A Table, accurately compiled from the Returns of Professional Examinations and their results, from the licensing bodies, according to Recommendation 6, Section v., of the Recommendations of the General Medical Council, of 1865, viz., "that Returns from the licensing bodies in Schedule (A) be made annually, on the 1st of January, and in the subjoined form, to the General Medical Council, stating the number and names of the candidates who have passed their first as well as their second examinations, and the number of those who have been rejected at the first and second examinations respectively: and that the Registrar forward a sufficient number of forms, with a notice for their being returned in due time;" and the committee have to remark, that these returns have this year assumed a more complete and regular form than heretofore.

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[1] Space compels us at present to omit these reports. We shall publish extracts from them in a future number.

Table of Returns, according to the Recommendation 7, *Section* IV., *of the Report of the Select Committee on Education, May* 5, 1864, (*previously recommendation No.* 23) *of the General Medical Council,* 1862.

Licensing Bodies.	Passed.		Rejected.	
	1st Examin. Number.	2d Examin. Number.	1st Examin. Number.	2d Examin. Number.
R. Coll. Phys. London .	75	75	10	13
R. Coll. Surg. England .	372	365	132	58
Soc. Apothecaries, London	281	264	28	22
University of Oxford . .	3	3	2	...
„ Cambridge .	4	3	2	...
„ London . .	[1] 25	23	11	1
„ Durham . .				
R. Coll. Phys. Edinburgh	81	213	23	48
R. Coll. Surg. Edinburgh .	[2] 71	[2]125	24	30
Fac. Phys. Surg. Glasgow	12	74	2	22
University of Aberdeen	(1st) 35 (2d) 25	(3d) 49	(1st) 3 (2d) 5	(3d) 4
„ Edinburgh	(1st) 93 (2d) 71	(3d) 74	(1st) 16 (2d) 27	(3d) 6
„ Glasgow .	40	30	9	...
„ St. Andrews	...	[3] 5 6	... ...	[3] 1
		Surg. Exam.	for M.D. accor	ding to Chart.
K. Q. Coll. Phys. Ireland	... ...	66 48 in	... Midwifery.	1 2
R. Coll. Surg. Ireland .	103 in Surgery. 12 in Midwifery.	103 ...	12 1 in Midwifery.	12 ...
Apothecaries' Hall, Ireland	18	22	2	9
University of Dublin . .	12	30	4	4
	1343	1578	313	233

2. The committee find, on examination of the Students' Register for last year, that it contains a list of all students registered by the Branch Councils, in compliance with the Recommendations in Section XI. of the Report on Education, of April 15, 1865, and that the entries extend from October 1, 1865 (when they were ordered by the Council to be commenced), to February 19, 1866.

The numbers so registered are as follows, viz.:—In England, 313; Scotland, 128; Ireland, 212; total, 653.

Of these they find that 8 students registered in England, and 60 in Scotland, belong to the year 1866, whilst the Register for Ireland is strictly confined to 1865. They recommend that the names of these 68 students, in order to keep the yearly Registers distinct, shall be carried on to the Register of 1866; this would leave for 1865 the following number of students registered:—In England, 305; Scotland, 68; Ireland, 212; total, 585.

This total, however, is very far from representing the actual number of students who have commenced their medical education in the United Kingdom during the year 1865, for the committee have learnt that, for instance, at St Mary's Hospital, London, nearly 40 students have been entered who have not been registered by the Branch Registrar for England, as required by the General Medical Council.

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[1] By the regulation, University candidates are allowed, under certain conditions, to postpone their examination in Physiology until the first M.B. Examination of a subsequent year.

[2] In this Return, those gentlemen having the letter D prefixed to their names in both columns, were candidates for the double qualification in Medicine and Surgery of the Royal Colleges of Physicians and Surgeons of Edinburgh.

[3] Final examination for M.D. under old regulation.

It is probable that other students in the three divisions of the kingdom are in the same case, but to what amount the committee have no means of ascertaining.

This statement will be sufficient to enable the Council to form an opinion as to the present very imperfect state of the Students' Register; and though it is much to be regretted that this great imperfection exists, yet the committee trust that when the revised and simplified recommendations of the present session become thoroughly known and understood, this imperfection, by the willing co-operation of the bodies in Schedule (A), will next year disappear.

Report of the Committee appointed to re-arrange the Recommendations of the General Medical Council on Education and Examination.

The committee beg leave to lay before the Council their Recommendations on the subjects of Preliminary Examination, of Registration of Medical Students, and of Professional Education and Examination; these Recommendations do not appear to require any remark on the part of the committee, who suggest that they be printed in a separate form and distributed as in previous years.

D. EMBLETON, *Chairman.*

Recommendations of the General Medical Council, on the Subjects of Preliminary Examination, of Registration of Medical Students, and of Professional Education and Examination, 1866.

I.—PRELIMINARY EXAMINATION.

1. That testimonials of proficiency granted by the national educational bodies according to the subjoined list may be accepted, the Council reserving the right to add to, or take from, the list.

1. A Degree in Arts of any University of the United Kingdom or of the Colonies, or of such other Universities as may be specially recognised from time to time by the Medical Council.
2. Oxford Responsions or Moderations.
3. Cambridge Previous Examinations.
4. Matriculation Examination of the University of London.
5. Oxford Middle Class Examinations (Senior).
6. Cambridge Middle Class Examinations (Senior).
7. Durham Middle Class Examinations (Senior).
8. Durham Examinations for Students in Arts in their Second and First Years.
9. Durham Registration Examination for Medical Students.
10. Dublin University Entrance Examination.
11. Queen's University, Ireland, two years' Arts Course for the Diploma of Licentiate in Arts.
12. Preliminary Examinations at the end of A.B. Course.
13. Middle Class Examinations.
14. Matriculation Examinations.
15. First Class Certificate of the College of Preceptors.
16. "Testamur" granted by Codrington College, Barbadoes.
17. Degree of Associate of Arts granted by the Tasmanian Council of Education, with a certificate that the student has been examined in Latin and Mathematics.

2. That students who cannot produce any of the testimonials referred to in the first Recommendation be required to pass an examination in Arts, established by any of the bodies named in Schedule (A) to the Medical Act, and approved by the General Medical Council.

3. That the examination in general education be eventually left entirely to

the Examining Boards of the national educational bodies recognised by the Medical Council.

4. That no certificate of proficiency in general education, which does not affirm the proficiency of the candidate in Latin, be deemed a sufficient proof of preliminary education previous to the commencement of professional studies.

5. That the various educational and licensing bodies be requested to transmit to the Registrar of the General Council, Returns, embodying any alterations which they may from time to time introduce into their Courses of General Study and Examinations, which qualify for the registration of medical students; and that a copy of such Returns be sent by the Registrar, as soon as convenient, to each member of the General Council.

N.B.—The following Recommendations were passed by the General Medical Council, May 25, 1866, but are not intended to come into operation till October 1, 1868.

1. That the following subjects constitute a minimum to be required of candidates for Preliminary Examination, viz.:—

Compulsory Subjects—

1. English Language, including Grammar and Composition.
2. Arithmetic, including Vulgar and Decimal Fractions; Algebra, including Simple Equations.
3. Geometry: First Two Books of Euclid.
4. Latin, including Translation and Grammar.

And 5. One of the following

Optional Subjects—

1. Greek. After the year 1869, Greek shall be one of the compulsory subjects.
2. French.
3. German.
4. Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.

2. That certificates of proficiency to be received from all bodies legally authorized to examine in general education in Great Britain and Ireland, and from the several licensing bodies enumerated in Schedule (A) to the Medical Act in Great Britain and Ireland, shall bear evidence that the candidates have been examined and approved in at least the above subjects.

3. That in the case of certificates received from similar educational and licensing bodies in other parts of the empire and foreign countries, satisfactory evidence shall be given to the Medical Council (or Branch Councils) that such certificates are equivalent to those recognised in the United Kingdom.

4. That it shall be delegated to the Executive Committee to prepare annually and lay before the Council for recognition a list of examining bodies, whose examinations shall fulfil the conditions of the Medical Council as regards preliminary education.

5. That the regulations of the General Medical Council as to preliminary education, adopted during the present session, shall not come into operation till October 1, 1868, and that in the meantime the previous regulations shall remain in force.

II.—REGISTRATION OF MEDICAL STUDENTS.

1. Every medical student shall be registered in the manner prescribed by the General Medical Council.

2. No medical student shall be registered until he has passed a preliminary examination, as required by the General Medical Council.

3. The commencement of the course of professional study recognised by any of the qualifying bodies, shall not be reckoned as dating earlier than fifteen days before the date of registration.

4. The registration of medical students shall be placed under the charge of the Branch Registrars.

5. Each of the Branch Registrars shall keep a Register of Medical Students.

6. Every person desirous of being registered as a medical student shall apply to the Branch Registrar of the division of the United Kingdom in which he is residing, according to a form, which may be had on application to the several Qualifying Bodies, Medical Schools, and Hospitals; and shall produce or forward to the Branch Registrar a certificate of his having passed a preliminary examination, as required by the General Medical Council, and a statement of his place of medical study.

7. The Branch Registrar shall enter the applicant's name and other particulars in the Students' Register, and shall give him a certificate of such registration.

8. Each of the Branch Registrars shall supply to the several qualifying bodies, medical schools, and hospitals, in that part of the United Kingdom of which he is Registrar, a sufficient number of blank forms of application for the registration of medical students.

9. The several Branch Councils shall have power to admit special exceptions to the foregoing regulations as to registration, for reasons which shall appear to them satisfactory.

10. A copy of the Register of Medical Students, prepared by each of the Branch Registrars, shall be transmitted, on or before the 31st December in each year, to the Registrar of the General Council, who shall, as soon as possible thereafter, prepare and print, under the direction of the Executive Committee, an alphabetical list of all students registered in the preceding year, and supply copies of such authorized list to each of the bodies enumerated in Schedule (A) to the Medical Acts, and through the Branch Registrars to the several Medical Schools and Hospitals.

11. The several qualifying bodies are recommended not to admit, after October 1870, to the final examination for a qualification under the Medical Acts, any candidate (not exempted from registration) whose name had not been entered in the Medical Students' Register at least four years previously.

In the case of candidates from other than schools of the United Kingdom, the Branch Councils shall have power to admit exceptions to this Recommendation.

⁂ The Branch Councils are desired to take means to make these Regulations known to the medical students at the various Medical Schools.

III.—AGE FOR LICENSE TO PRACTISE.

1. That the age of twenty-one be the earliest age at which a candidate for any professional license shall be admitted to his final examination; that the age shall, in all instances, be duly certified; and that a return of any exceptions to this recommendation allowed by the licensing bodies, together with the reasons for such exceptions, be transmitted to the Branch Council of that part of the United Kingdom in which they have been granted.

2. That no license be obtained at an earlier period than after the expiration of forty-eight months subsequent to the registration of the candidate as a medical student.

IV.—PROFESSIONAL EDUCATION.

1. That the course of professional study for a license shall comprehend attendance during not less than four winter sessions, or three winter and two summer sessions, at a School recognised by any of the licensing bodies mentioned in Schedule (A) to the Medical Act.

2. That it be recommended to the several licensing bodies that the courses of instruction required by them be framed in such a manner as to secure a due share of attention, both to preparatory branches and to those more strictly connected with the Practice of Medicine and Surgery; and that it be suggested accordingly to these bodies, that their Regulations should be such as to prevent attendance upon lectures from interfering with Hospital and Clinical Study.

3. That the Council will view with approbation any encouragement held out

by the licensing bodies to students to prosecute the study of the natural sciences before they engage in studies of a strictly professional character.

V.—PROFESSIONAL EXAMINATION.

1. That those licensing bodies which have not already done so, be requested to furnish a statement of the dates of their examinations and of the modes in which such examinations are conducted, whether by written, oral, or practical examination, and of the length of time a candidate is under examination in each or all of these ways; and that the Registrar transmit these Reports to the members of the Council, in order that they may be taken in consideration at the next meeting of the several Branch Councils.

2. That the professional examination for any license be divided into two parts; the first embracing the primary or fundamental branches directly connected with the Practice of Medicine and Surgery; that the former be not undergone till after the close of the winter session of the second year of professional study; and the latter or final examination, not till after the close of the prescribed period of professional study.

3. That the examination in Physics, Botany, and Natural History may be undergone at an earlier period than the first professional examination.

4. That the professional examinations be conducted both in writing and orally; and that they be practical in all branches in which they admit of being so.

5. That the professional examinations be held by the several licensing bodies, except in special cases, at stated periods, to be publicly notified.

6. That Returns from the licensing bodies in Schedule (A) be made annually, on the 1st of January, to the General Medical Council, stating the number and names of the candidates who have passed their first as well as their second examinations, and the number of those who have been rejected at the first and second examinations respectively; and that the Registrar forward a sufficient number of forms, with a notice for their being returned in due time.

7. That it is not desirable that any University of the United Kingdom should confer any degree in Medicine or Surgery, whether that of Bachelor, Doctor, or Master, upon candidates who have not graduated in Arts, or passed all the examinations required for the Bachelorship in Arts, or the examinations equivalent to those required for a degree in Arts.

VI.—SUPERVISION OF EXAMINATIONS.

1. That the visitations of the examinations, preliminary as well as professional, of the qualifying bodies, by the Branch Councils, or such of their Members as they may depute, be continued during the ensuing year.

2. That the reports of the visiters shall apply to every part of the examinations of each body, and shall include a statement of the facts observed and of the opinions of the visiters as to the efficiency of the examinations; as also such remarks and suggestions on defects in them as circumstances may indicate.

3. That the reports of the visiters be submitted in the first instance to the Branch Councils; and that thereafter the Branch Councils shall direct them to be printed and circulated confidentially amongst the members of the General Council, so that they may be in a condition, at the meeting of the General Council in 1867, to consider them maturely.

Moved by Dr Andrew Wood, seconded by Dr Leet, and agreed to,—"That the Report be received, and entered on the minutes."

MINUTES OF MEETING, *Tuesday, 29th May* 1866.

Dr Burrows, *President*, in the Chair.

9. Moved by Dr Fleming, seconded by Dr Paget, and agreed to,—"That the Executive Committee consist of six members exclusive of the President,

instead of four, as at present. That of the six members to be elected, four be chosen from the English, one from the Scottish, and one from the Irish Branch Council."

The Council then proceeded to ballot for the Executive Committee, when the following were found to be elected,—Mr Hawkins, Dr Acland, Dr Paget, Dr Andrew Wood, Dr A. Smith, Dr Sharpey.

SIR THOMAS WATSON, M.D., BART.

THE profession will receive with extreme gratification the announcement that Her Majesty has conferred the honour of a baronetcy upon Dr Watson, the President of the Royal College of Physicians. Sir Thomas Watson has long been the acknowledged head of the medical profession in this country. As an accomplished physician, as a writer of singular elegance and purity, as a cultivated gentleman, and as one of the most able and highly honourable men who ever led the profession, Dr Watson has long occupied a position which fully entitled him to this honour. No one will feel surprise that he should now be selected for this distinction, for it is one which has been frequently rumoured. The due pre-eminence of the metropolis is recognised by the appointment, as we have now two medical baronets of recent creation. The honour conferred upon Dr Watson will be regarded by all classes of the profession with the most lively satisfaction.—*Lancet.*

THE TWO SERVICES.

THERE is reason to believe that the pressing necessities of the Naval Medical Service will ensure the adoption of the recommendations of the Committee on Rank, Pay, and Promotion of the Medical Officers of the Army and Navy, so far as regards the navy. As to the army, we believe that the Horse Guards and Dr Gibson in concert have, as usual, declared against the interests of the medical officers, and are desirous to postpone the whole matter for a year. But it is not certain that the Marquis of Hartington, or General Peel, if he should come into office, will consent to treat with contempt the recommendations of a committee of so much official importance, and which was at so much trouble.

PUBLICATIONS RECEIVED.

Baker,—Common Nature of Epidemics, from Writings and Official Reports by Southwood Smith, M.D. Edited by T. Baker. London, 1866.

Barclay,—Gout and Rheumatism, in relation to Disease of the Heart. By A. W. Barclay, M.D., etc. London, 1866.

Basham,—Dropsy. By W. R. Basham, M.D. Third Edition. London, 1866.

Beale,—Todd and Bowman's Physiological Anatomy. A New Edition. By Lionel S. Beale. Part I. London, 1866.

Dunn,—The Mercurial and Non-Mercurial Treatment of Syphilis. By R. W. Dunn. London, 1866.

Fayrer,—Clinical Surgery in India. By J. Fayrer, M.D., etc. London, 1866.

Foster,—The Sphygmograph in the Investigation of Disease. By Balthazar W. Foster, M.D. London, 1866.

Gairdner,—The Function of Articulate Speech, with a Case of Aphasia By Professor W. T. Gairdner, M.D., etc. Glasgow, 1866.

Johnson,—The Anatriptic Art. By Walter Johnson, M.B. London, 1866.

Jones,—Defects of Sight and Hearing. By T. Wharton Jones, F.R.S., etc. London, 1866.

Lee,—The Principal Baths of France. By Edwin Lee, M.D. Fourth Edition. London, 1866.

Pearse,—Notes on Health in Calcutta and British Emigrant Ships. By W. H. Pearse, M.D. London, 1866.

Rowell,—Elevation and Floods on Health. By G. A. Rowell. Oxford, 1866.

Scoresby-Jackson,—Note-Book of Materia Medica, Pharmacology, and Therapeutics. By R. E. Scoresby-Jackson, M.D., etc. Edinburgh, 1866.

Taylor,—Manual of Medical Jurisprudence. By A. Swaine Taylor, M.D., etc. Eighth Edition. London, 1866.

The True and False Sciences: A Letter on Homœopathy. London, 1866.

Williams,—Recent Advances in Ophthalmic Science. By H. W. Williams, M.D. Boston, U.S., 1866.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*On the Milk Cure.* By PHILIP KARELL, M.D., Physician to His Majesty the Emperor of Russia. Translated from the Author's Manuscript by G. L. CARRICK, M.D., Physician to the British Embassy at St Petersburgh.

(*Read before the Medical Society of St Petersburgh, on the 8th and 23d March* 1865.)

IT is always with a rich store of remedies, and with the profoundest belief in their efficacy that the young physician enters upon the practice of his profession. Experience, however, soon demonstrates to him the utter worthlessness of these pretended riches, and thus the practitioner, whose learning has ripened with age, finds his circle of ordinate remedies narrowing from year to year, until he is obliged at last to confess that upon the surface of his little nail he could write down almost all the remedies which he employs. If I have experienced something similar; if, after a practice extending over thirty-four years, I entertain certain doubts with regard to the curative virtues of particular medicines, I have acquired, on the other hand, a full belief in the efficacy of a class of remedies which have the power of modifying and changing nutrition. It is impossible, for instance, to deny the effects produced by the thermal springs of Karlsbad, Marienbad, Eger, Kissingen, Vichy, etc. Have we not all seen patients cured by those means after we had treated them in vain for many years, employing occasionally the very salts to which the curative virtues of the mineral waters are ascribed. With similar facts before us, we naturally arrive at the conclusion that the merit of effecting cures in the cases of which we have just spoken is to be attributed mainly to regular or *methodical administration* of these saline solutions.

This is, in fact, absolutely necessary: it is a *sine qua non* which the experience of ages has confirmed; and it would be vain for the invalid to partake of the most renowned waters, unless he intended strictly to obey the prescribed rules, by which means a thorough change of nutrition might be effected.

In directing your attention to the methodical cure by means of milk, I do so in the full conviction that the numerous recoveries made by this treatment are due, in great measure, to judicious employment of the remedy, and to strict observance of method in its administration. It is only by thus acting that it is possible to obtain really good results.

With regard to this plan of treatment, I believe I may claim credit for having been one of its warmest propagators in Russia, as well as in other countries. I only did so, however, after effecting a number of cures, which have since multiplied by hundreds, and which have of late increased to such an extent, that I have been unable to note their histories as fully as I did at the commencement. My perseverance would be fully rewarded were I to see this mode of treatment generally recognised and adopted by medical men, and raised to that rank in therapeutics, which, in my opinion, it so justly deserves.

I shall first communicate the results of my reading, unfortunately incomplete, in the Imperial library, with regard to the subject under discussion, and I shall prove to you that the cure of disease by milk is referred to by many authors, both ancient and modern. I shall then trace, in a few words, the reasons which have made me arrive at the firm conviction, that in the use of this fluid we possess one of the strongest weapons against that obstinate enemy of practitioners which, in spite of its being disguised under various forms of chronic ailments, is, finally, almost always recognised as a "*perverse, or deficient nutrition.*" I have many cases in my notebook, but I shall only cite a few this evening.

Let us, in the first place, however, occupy ourselves with the authors who have writen upon this subject.

Hippocrates[1] was the first to recommend the employment of ass' and then of cow's milk in phthisis. He also extols it as an admirable remedy in gouty affections, particularly when the articulations are involved, and also in sciatica. In his *De Natura Muliebris*, he suggests the use of it in leucorrhœa. To make the milk more digestible, he recommends it to be mixed with well-water, and this mixture he calls *hydrogala*. Honey and salt are added to it, also for the same purpose.

Aretæus[2] says: "Si quis phthisicus multum lactis bibat, nullo alio alimento indiget."

Alex. Trallianus[3] speaks highly of this remedy in phthisis.

Avetius mixed a given quantity of milk with a fourth part of water, and then boiled the mixture down to one-half its bulk.

Pliny treats at great length of the good effects of milk, and particularly of ass' milk, in various diseases.

Galen, wishing milk to answer the physician's purpose more fully, says, that the cows should be fed on certain herbs, such as, the Cytisus polyganum auriculare, Triticum repens, Rubus cæsius, and

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[1] De Affectionibus Internis, cap. 4.

[2] De Morbis Chronicis, lib. iii. cap. 7.

[3] Lib. vii. cap. 1 and 2.

Achillœa millifolium. He recommends milk chiefly in consumption, and refers[1] in particular to a place called Stabiæ, of which a later physician, Patinus,[2] wrote as follows: "Galenus quidem ad Stabiam montem aegrotos suos ablegabat, unde sani redibant, id quid confirmatum habes *nummo* Imperatoris Getæ signato, imagine *vaccæ*, qua hujus montis accelæ lactis præstantiam indicare voluerunt." The inhabitants of that beautiful country, delightful for its situation, fresh air, and admirable pastures received from the Emperor Geta, in gratitude for, and as a testimony of the good results obtained from milk, a medal representing a cow.

This happened at the beginning of the third century.

The celebrated Rhazes, or Razi, recommends milk in all hectic fevers.

Passing on to more modern times, we find a strong advocate of the milk cure, in the celebrated Hoffman. He cites the following authors in support of his views, viz., Martianus,[3] who says: "Antiquitas lac fuisse veluti sacram anchoram et omnium remediorum caput, ita ut vix ullus morbus esset, in quo lac non administraretur." He also relies on the opinion of a Dr Wepferus, whom he calls the pearl of Swiss physicians. The lines quoted, I shall take the liberty of translating from the Latin, as much for their originality as their meaning: "Milk is a sovereign remedy. By repeated circulation the prickly particles of the blood get blunted, while the alvine and urinary secretions produce the tartaric ferment, whereby the blood gets re-heated, and, depositing its sediment (*scoria*), becomes metamorphosed into new blood. But," he adds, "the longer my cure is persevered in, the more radical will it be, provided the patient gets almost nothing to eat except the amount of milk prescribed. Unfortunately, our contemporaries, pretending to be disgusted, generally lose courage at the commencement of the cure; they cannot resign themselves to the continued use of milk and a low diet. It is not astonishing, then, if the desired effect be not produced, or even if the result of the treatment prove pernicious."[4]

Milk is recommended as an antidote in poisoning by Boglivus, Sydenham, Frenesco, Haller, Pechlinus, and many others.

Andrew Baccius, Physician in Ordinary to the Pope Sixtus V., and Professor of Botany in Rome (who died about the year 1600), states, in the fourth volume of his works, that in Italy, and particularly at Naples, certain meadows were reserved exclusively for medical use, as different plants were there cultivated according to the directions of physicians, and these plants served as pasture for the animals that were kept to give milk. The sick were afterwards sent away, as they are now-a-days, to some thermal spring. But even in the place itself they found all imaginable comforts.

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[1] Libr. v., Method-medic., cap 12.

[2] Ex epistol. Patini, tom. ii. epist. p. 213.

[3] Comment. in Hippocrat., lib. i. de morbis mal., p. n. 205.

[4] Tr. Hoffmani, Opera Omnia, Genevæ 1740, tom i. lect. 2, cap. 2, p. 423.

Every invalid was allowed a goat, a cow, or an ass, which he could lead to graze in any locality that produced the best herbs, and those best suited for his illness.[1] It is particularly necessary, however, to cite Van Swieten on this subject. He says, "Observationes numerosæ docuerunt, Podagricis profuisse lactis usum, et quidem adeo, ut ab omni paroxysmo liberi fuerint, quamdiu *solo lacte* viverent. Non tamen delet latentem illam in podagricis causam Prœgumenam. Profuit enim præ reliquis omnibus præsidiis lactea hæc diæta; quamdiu ne latum unguem ab ea discesserint. Quam primum vero ad sanorum dietam, utut lenem mitemque, se receperit, qui huic inueverat, Podagra, confestim reversa, ægrum longe pejus, quam ante hac, vexavit."[2]

Now, although all these great pioneers in science had not the same means for diagnosis at their command that we have got, still they always carried heart and soul into the investigation of disease, and were not less exact in observing than we are, neither were the results they arrived at inferior to ours. I freely admit that the experiences of the ancients with regard to this matter remained long unknown to me; but this ignorance was excusable, when compared with the ignorance which prevails pretty generally with regard to the practical investigations of modern authors, particularly when the information is furnished in medical periodicals, of which, in the present day, there is certainly no scarcity.

Thus, Dr Chrétien, of Montpellier, published in 1831 very instructive details with regard to the great benefit of milk in dropsy, and gives the history of a number of such cases.[3] Nevertheless, some fifteen years after the publication of these observations, there is not the slightest mention made of them in the *Encyclopæd. Worterbuch der Medic. Wissenschaft*, *Berlin*, 1846, although there is a long article on milk in that work.[4] In Hufeland's *Jour. der Praktischen Arzeneikunde*, band 32, Dr Schluither, of Weimar, refers to a case of malignant typhoid fever treated with milk. In Schmidt's Annals,[5] mention is made of three cases of dropsy treated by milk. In the *Allgemein. Medic. Annalen* for 1817, there is an article by Professor Thilow, of Erfurth, "On the Use of Milk in Intestinal Obstructions."[6] Dr Schmidtlein resorted to the milk cure in Bright's disease.[7]

Chrétien's successor in France, Serre D'Alais, relates upwards of sixty cases of dropsy which he treated, within five years, in this way, and even asserts that in most of those cases he effected a radical cure (?).[8] There were only four or five instances in which no improvement was observed, and he further asserts that he only saw one case in which the patient succumbed. He was the first who laid down precise rules for administering milk. He gave it thrice daily, and strongly advised the use of raw onions after each dose.

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[1] See Daehne, Die Milch und Molken-Kur. Leipzig, 1817. An excellent work on the subject.

[2] Commentaria in Hermanni Boerhavii Aphorismos, tom. iv. p. 371.

[3] Archives Générales de Médecine, tom. xxvii. pp. 329–49 and 484–94.

[4] Vol. xxiii. p. 309, etc.

[5] Vol. ii., v. and xvi.

[6] Altenburg and Leipzig, vol. xii., Dec., p. 1555–1607.

[7] Berliner Klinische Wochenschrift, 1864, p. 150.

[8] Bulletin Général de Therapeutique, tom. xlv. p. 30.

According to this author, the prognosis is unfavourable, if, during the anasarca, there be a diminution in the quantity of urine. Also, if there be no improvement during thirty days, there is no hope, according to him, of seeing it afterwards. Unfortunately, the history he gives of his cases is so inexact and incomplete that we can arrive at no definite conclusions with regard to the nature of the dropsies treated by that physician.

I must confess I have no faith in such a large number of fortunate cases. Nevertheless, side by side, with the experience of Serre d'Alais, we find equally successful cases recorded by Claudot, Ossilur, Dieudonné, Guignier, d'Artigues.[1]

With regard to my own practice, I have, after fruitlessly trying all sorts of remedies in many chronic and obstinate diseases, at last succeeded in thoroughly bringing the alimentary canal, that seat of so many diseases, under my control. I did this by administering milk according to a new method. The results which I have thus obtained tempt me to publish my observations with reference to the efficiency of this mode of cure, provided, of course, that it be administered with method, and by a person of experience. And in the first place, then, must we attribute the beneficial influence of milk in certain serious illnesses merely to its nutritive qualities, or to some occult medicinal virtue? I cannot pronounce in favour of the one or of the other hypothesis. It must be remembered, however, that milk and chyle resemble each other very closely. After a great deal of experience, I have arrived at the conclusion, that in *all dropsies*, in *asthma*, when the result of emphysema and pulmonary catarrh; in obstinate *neuralgia*, when its cause lies in the intestinal canal; in diseases of *the liver* (simple hypertrophy and fatty degeneration), and generally in diseases where there is faulty nutrition, often a consequence of obscure sub-acute inflammation of the stomach or intestines, followed by affection of the nervous centres,—in all these cases, I consider milk as the best and surest of remedies. Even in those cases where the dropsy is the result of organic heart disease, or of old-standing liver complaint, or of far-advanced Bright's disease, I have seen very marked improvement take place, which also lasted a considerable time. But if, unfortunately, we are unable to cure organic disease, shall we not have conferred a great benefit on poor anasarcous patients if we reduce, with a promptitude little hoped for from other remedies, the distressing symptoms of œdema?

If, in giving a general definition of the milk cure, we call it a

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[1] Bulletin Général de Therapeutique, tom. xlv. p. 363, 514, 515. Jour. de Médecine et de Chirurgie Militaire: Bulletin Général de Therapeutique, tom. liii. p. 337. Jour. de Bordeaux, 2d ser., vii. p. 459.

nutritive cure, it by no means follows that it should only be administered in diseases dependent upon a perverse nutrition. It might as well be defined as a *sedative* cure, for it is very often useful in those cases where Valsalva would in all probability have employed fasting and phlebotomy. A more exact definition, perhaps, would be, that milk, when methodically administered, is a *regulator of nutrition*. It might perhaps be urged that milk is a well-known remedy, and that every physician uses it in appropriate cases. I admit that all medical men are sufficiently well acquainted with milk as a nutritive agent, and as an antidote, but I speak from experience when I assert, that in general the cure by milk, *scrupulously administered, and in strictly measured doses*, is not sufficiently, and only very rarely, recognised as a sovereign and useful remedy.

I have frequently, during the last fifteen years, been called into consultation in cases which were thought hopeless, and in many of which I recommended the milk cure, which had never been resorted to during the whole course of the malady. I had prescribed, even before that time, the employment of milk, but without regulating its administration. It was only by degrees that I arrived at a methodical system of treatment. Experiments made by other physicians have tended to strengthen my convictions. Thus, when accompanying the late Emperor Nicholas in his travels, we arrived one day at Ishougneff, in the centre of the Steppes, where eight regiments of cuirassiers and some other troops were encamped. An epidemic of intermittent fever was raging at the time. I found many of the wards filled with dropsical patients, the greater number of whom had hypertrophied spleen and liver. To my great satisfaction I saw a bottle of milk at the bedside of each patient, and I learned from the senior physician, Dr Weks, that he had given up all other modes of treatment in those special cases, having found a sovereign remedy for them in milk. Another of my colleagues, Dr Behm, having made important observations during five years in the hospital to which I was also attached, wrote to me with regard to the malignant typhoid fever which raged in Poland and Lithuania in 1854, that he had had no success in treating that epidemic until he resorted to the milk cure and the occasional use of Hungarian wine.

My respected friend, Dr Inozemtseff of Moscow, resorted, with the help of his assistants, during his long professional career, to the milk cure in nearly 1000 chronic cases. In his work on the "Milk Cure," published in Moscow in 1857, he speaks of the good results which he obtained from this remedy, and affirms that its efficacy is indisputable. Nevertheless, he orders milk without defining the dose. He points out the difference between a *milk cure* and a *milk diet*, on which latter he places a patient for several years. Inozemtseff refers the good results which I have obtained to the *moderate* doses in which the milk was given. I believe that a regulated mode of administration is the most rational. Milk is more easily digested when taken in small draughts and at stated intervals. If we allow milk to be taken *ad libitum*, the patient will likely soon suffer from indigestion.

I shall cite two very interesting cases from Dr Inozemtseff's book. In the first case he relates the history of a young man, whose father, mother, brothers, and sisters had died of consumption. Among other symptoms, tubercular deposit was detected in the apices of both lungs. Inozemtseff placed the patient on a milk diet for a twelvemonth. Afterwards, he allowed the addition of other articles of food. Under this treatment the young man recovered. He married afterwards, and has kept his health ever since.

The second case which I shall quote, was that of a lady afflicted with enormous obesity. She grew so large that she had to let out her chemises, and at last was almost suffocated in her own fat. All cures for obesity were tried, but in vain. Dr Inozemtseff had seen many emaciated persons grow stout from the use of milk, but he was not aware that milk also had the power of producing a contrary effect. All remedies having failed, he employed the milk cure, and to his great satisfaction his treatment was crowned with success.

In 1861, I told Professor Felix Niemeier, director of the clinique at Tubingen, of my experience of the milk cure. A short while after, he wrote to me as follows:—"I thank you sincerely for having recommended the milk cure to me. I often resort to it, and can praise it highly. If one were to acknowledge the existence of a number of diseases, the cause of which is not to be sought for in the remediable affections of certain organs, but rather in a perverse nutrition of which we are *unable to define either the extent or nature*, we must then admit the curative virtues of milk, and regard as a true advance in science the discovery that this aliment is an innocent, and at the same time efficacious, remedy for *producing a complete change of nutrition.* How much more dangerous are other *alterative* cures resorted to in different cases, for example, hydropathy, sea-bathing, saline mineral waters, etc. I formerly placed the milk cure on a par with these remedies; but, since you directed my attention to the subject, I find that indications for its use are more easily discovered than for the use of other modes of treatment just cited. I shall have the sick who are subjected to this mode of cure weighed, in order to have a correct list, and I shall send you the results."

Two years after the above correspondence, viz., in 1863, Dr Niemeier wrote to me thus:—" The enclosed epitome of the history of a case will prove to you how highly I esteem the milk cure and the results I have obtained by its use. Should you ever read a paper on this subject in your Medical Society, you can also refer to the results of your mode of cure at the Tubingen clinique. Your method was strictly carried out, and the patient lost 25 lb. of his weight in seven days. Under former modes of treatment he increased from 2 to 3 lb. daily. These figures speak for themselves."

The case which Dr Niemeier speaks of, as well as three similar cases, are adverted to in Schmidt's Inaugural Dissertation (Tubingen).

We shall now pass on to the consideration of my mode of treatment. I generally commence the cure by employing milk *alone*, and forbidding all *other kind of nourishment*. I proceed with great caution in prescribing for the patient, three or four times daily, and at *regularly-observed intervals*, half a tumbler or a tumbler, *i. e.*, from 2 to 6 ounces, of skimmed milk. Its temperature must be made to suit the patient's taste. In winter they generally like tepid milk, heated by placing the tumbler or cup in a vessel filled with hot water. In summer they generally prefer it of the same temperature as the surrounding atmosphere. They should not gulp it all at once, but take it slowly and in small quantities, so that the saliva may get well mixed with it. Of course, the milk must be of good quality. That of town-fed cows has generally an acid reaction; that of country-fed cows is better, because its reaction is generally neutral. If the patient digest the milk well, which is proved by the fæces becoming solid, I gradually increase the dose. The first week is the most difficult to get over, unless the patient has a strong will and firm faith in the cure. During the second week two ordinary quarts are generally administered each day. If the cure take its regular course, then the milk must be drunk four times daily—at eight in the morning, at noon, at four P.M., and at eight P.M. If the patient desire it, I change the hours, but I always insist on regular intervals being observed; for the patient will think lightly of the cure, if he be not ordered to observe some regularity while subjected to it. No confidence can be inspired, and no cure expected, if the physician says to his patient, "Drink milk in whatever quantities, and whenever you wish."

When obedient to the physician's orders, the patients complain neither of hunger nor thirst, although the first doses appear very small to them. If, instead of four cups of skimmed milk, a person afflicted with a severe illness takes four large tumberfuls of unskimmed milk, you may be sure he will not digest it, and his confidence in the remedy will be shaken at the very commencement.

I was consulted six years ago by Mrs B. She had been suffering for four months from chronic diarrhœa, and from vomiting. The disease was called chronic gastro-enteritis by some. The patient was emaciated, and her liver undergoing fatty degeneration. She had suffered a long time from uterine and intestinal hæmorrhages. In a consultation which I had with two experienced practitioners, I proposed the milk cure as the *refugium unicum* in this case. The two gentlemen replied that they had tried it several times, but that the lady could not digest it. I knew from what they said that the patient had partaken of milk in large doses several times daily, and had beef-tea and other food besides. We resolved to try the methodical administration of milk. I ordered skimmed milk to be given thrice (each dose containing four tablespoonfuls) during the first day, and absolutely nothing else. From that time the vomiting ceased, and after the third day the diarrhœa disappeared. The fæces acquired their normal appearance, which had not been the case for years before. At the end of the second week she could digest, without inconvenience, two bottles of milk a-day. Finally, she made a complete recovery and lived several years.

But it must not be supposed that such an effect can generally be produced when nothing is administered except small doses of milk. I have placed patients, who were taking milk in minute quantities, also on beef-tea, white bread, and water; but I never observed the same satisfactory results after this mode of treatment. The cure never was complete when allowed anything except milk to be taken for dinner. Sometimes, when the invalid had arrived at taking from ten to twelve glasses per day, I observed a return of his illness. I had then to commence the cure anew, by prescribing milk in small doses. At the beginning of the treatment, the patient's bowels are frequently constipated, which I consider of good augury. The fæces become very hard, in consequence of the absorption of the fluid particles of the milk. This may be remedied by warm water injections, or by the use of castor-oil or rhubarb. Persons suffering from flatulence are soon relieved of it by the milk cure. If the constipation be obstinate, I order the addition every morning of a little coffee to the dose of milk, or, towards four o'clock P.M., stewed prunes or a roasted apple. If, on the other hand, diarrhœa and borborygmi be the result of this mode of cure, it proves either that the milk was too rich, or that it has been administered in too large doses. If the diarrhœa does not arise from ulceration of the intestines, it is sure to be cured by strict observance of method in this treatment.

Feverishness is no contra-indication to its use. If the patient feel very thirsty, I allow him to drink water, or Seltzer-water. If he have a strong desire for solid food, I allow him, at the end of the second or third week, a little stale white bread with salt, or a small piece of salt herring. At four o'clock, *i.e.*, his dinner-hour, the patient may, as in the morning, take a small quantity of stale bread. Once a-day, instead of pure milk, I give him some soup made of milk and oatmeal. After continuing this treatment for five or six weeks, it may be modified (according to circumstances), by our allowing only milk thrice daily, and once a steak or chop. I have found that raw meat is easiest to digest.

The strongest opposition to treatment I have generally experienced from the patients themselves, and the cause is easily explained. If a person, suffering from some chronic ailment, has already been subjected to various modes of treatment without having been cured by any one of them, and if the milk cure be suggested to him, which, in his opinion, can lead to no improvement, he thinks it is the same as a verdict which declares: "You are lost, and medicine cannot save you!" I have sometimes seen nervous patients grow seriously alarmed, and request time to reflect whether they should subject themselves to the treatment or not. Thus the patients either assert that milk is repulsive to them, or that they are unable to digest it,—this one, because he has always been troubled with his liver; another, because he smokes; while a third is afraid he will die of hunger, or pretends that he has already tried the milk cure, but was unable to continue with it, because of the disagreeable effects it produced. Others ask what purpose the milk cure can serve, when other medicines have done little, if any, good. My answer then is, that milk is a food easy of digestion with every person, provided it be given with precaution, that it be of good quality, and administered in definite doses; that it is the first food of man, and that a new-born infant shows no dislike to new milk. To die of hunger, even when taking nothing but milk, is impossible, since there are people who take no other nourishment. In milk are united all the elements necessary for the nutrition of our body, and besides this substance is easily assimilated. Lastly, I add that long experience has convinced me that milk is an energetic remedy in many diseases, and that in some cases I prefer it to any other remedy. Thus I am rarely unable to persuade the patient to follow out my advice; and in the majority of cases, notably those of dropsy, I have generally had the satisfaction of receiving, in a very short while, the sincere thanks of the patient for the speedy relief he felt.

Before we come, however, to "*indications* and "*contra-indications*," allow me to submit to your notice the history of several diseases observed by myself, or by some of my colleagues, able and conscientious observers.

CASE I.—Mr W., of St Petersburg, aged 67, formerly in pretty good health, had, in consequence of a feeling of heaviness in the spring of 1828, been bled: these bleedings were repeated yearly until 1858. He was fond of good living, rarely went out of doors, and led a sedentary life. In 1859, he had reached his 59th year. He then felt a weakness in his feet, and was unable in consequence to leave his study, where he could only manage to walk about with the aid of a stick. He was advised to go abroad. Dr Walther, of Dresden, detected sugar in the urine, and advised him to repair to Karlsbad. He went there accordingly, and was ordered to drink the waters by Dr Seegen. The cure succeeded thus far, that, at the end of the treatment, he could walk a distance of three miles. The specific gravity of the urine was 1045 before the treatment, and 1030 after. The quantity of urine passed before the treatment was from 10 to 12 lb.; after, from 6 to 8 lb. Sugar before treatment, from 7 to 8 per cent.; after, from 5 to 6.

The next year, Mr W. was feeling pretty well, but, for caution's sake, returned twice to Karlsbad, viz., in 1860 and in 1861,—always deriving great benefit from his journey. In 1862, towards Easter, his feet became œdematous, and he had an attack of asthma. The usual remedies, including milk, were administered; the bad symptoms disappeared, and he spent the summer and autumn tolerably well. In November, the anasarca returned, the horizontal position became insupportable, and on analysis the urine was found to contain 10·4 per cent. of sugar and albumen. The requisite medicines were employed, and for nourishment he got every day from eight to twelve tumbers of milk, *direct from the cow*, good roast beef, best Bordeaux wine, etc., etc. But the pain increased, the malady was declared incurable, and the relatives were informed of the imminent danger. I was then consulted, but only eight weeks subsequent to the relapse. The diagnosis of the four physicians in attendance was the following:—" Fatty degeneration of the heart, hydropericardium, œdema of the lungs, and catarrh of one. Sugar and albumen in the urine; general anasarca and ascites. The patient for seven or eight weeks has had to sit in bed. Sleep disturbed, and lasts but one or two hours. Every movement brings on a fit of dyspnœa. Spits a considerable quantity of mucus, and expectoration difficult. Tongue intensely red, and stripped of epithelium in several places. Feces healthy. Pulse from 80 to 90, feeble. Patient's appearance pretty good, and a certain amount of firmness in the muscles."

I watched the patient for several days, and soon became convinced that this was a case in which the milk cure was indicated. My position was extremely delicate, as I was obliged to face four practitioners whose combined years of practice amounted to more than a century, and each one of whom was supposed to know in what cases the milk cure was beneficial. After a prolonged discussion, we agreed to give the milk cure a trial, in the strictest manner possible. The addition of tonics was suggested, on the ground that a patient troubled with congestion of both lungs, and with fatty degeneration of the heart, would be dead in forty-eight hours without a tonic to support him. Though concurring with my colleagues in their diagnosis, I insisted on the strict observance of my mode of treatment, as tonics could not save the life of a patient on the verge of death. I saw safety only in treating the digestive organs with the greatest care; tonics, I knew, would simply irritate them. At last consent was obtained for a trial of the milk cure. On the 9th January 1863, all medicines were laid aside, and the patient was placed under the new treatment; on the morning of the same day he had eaten some meat, and during the rest of the day he got two cups (containing six ounces each) of warm skimmed milk. On the following day, four cupfuls. On the 11th January, a meeting of the physicians. The patient informed us that during the whole course of his illness he had not passed so good a night; he was even able to stretch himself out in a horizontal position for two hours. The circumference of his waist had diminished about four inches. He had passed fourteen tumblerfuls of urine, though he had only taken four of milk. The dyspnœa was less severe, the tongue not so red. He complained neither of hunger nor thirst, and was satisfied with the milk. On the 13th January, the analysis of the urine showed hardly any sugar, viz., 0·5 per cent.; albumen, 0·45 per cent.; specific gravity, 1024; quantity voided, 2400 cubic centimetres. Up to the 17th January the doses of milk were the same; an amelioration in the symptoms continued; the œdema of the buttocks, which was very extensive before the treatment, had entirely disappeared; and from the thighs downwards, the swelling had greatly diminished. The apices of the lungs were free, and both cardiac sounds were heard more distinctly. The attacks of dyspnœa had ceased. The patient could sleep for six hours without waking, but had still to keep the sitting posture. He was in high spirits. The bowels having been constipated for four days, castor-oil was prescribed.

From 17*th* to 22*d Jan.*—Five glasses of milk daily, and a small roll baked with salt. Hardly any œdema of upper part of thighs; legs less swollen; tongue still void of epithelium. Analysis of urine on 20th January:—Sugar, 1·0 per cent.; albumen, 0·5; spec. grav., 1016; quantity, 1100 c. c.

From 22*d* to 26*th.*—During the first days, great improvement in the symptoms; appetite very good. Dose of milk increased, but too suddenly, to ten tumblers a-day. 26th Jan. Bad night; castor-oil to relieve constipation. Seven hours sleep the next night.

From 27*th Jan.* to 3*d February.*—The patient takes from four to five glasses a-day, and, as a preventive of constipation, a little coffee with his milk in the morning, and from ten to twelve stewed prunes during the day. Strength returning; no dyspnœa, no cough. Urine copious, and œdema confined to lower part of legs and ankles. Slight sub-crepitant rhonchi, but only at back and base of the lungs.

On the 4th February, the patient had been exactly one month under the milk cure. His condition was satisfactory. He can sleep for seven hours in a horizontal position; walks about a great deal, and without difficulty, in his room; and attends, as he used to when in health, to his business. The œdema is but feebly visible at the ankles. The appetite is so voracious that milk can no longer appease it. Patient allowed to dine at four o'clock on soup and roast, the milk being taken in doses of two cups thrice daily. During February traces of cylindrical casts were observed twice in the urine, but they again disappeared. Sugar from 1·3 to 3·9 per cent. To prevent a relapse, I proposed a tonic, which was to consist solely of fresh air, breathed in a sunny climate. I recommended Nice, and the first six weeks spent there by my patient did him a great deal of good. During Easter he partook, according to the Russian custom, too largely of bacon, hard-boiled eggs, and other indigestible articles of food. The œdema returned, and the patient placed himself under the milk cure. In May he underwent a radical cure, and, contrary to his physicians' advice, left for Karlsbad, where, three days after his arrival, the disease grew worse. He commenced drinking the waters a second time, but without any benefit. Nevertheless, the analysis of the urine gave only 3 per cent. of sugar, but a little more albumen; the degeneration of the liver had undoubtedly progressed. He proceeded to Geneva, where he caught a severe cold. Severe shiverings, the precursors of pleurisy with exudation, came on. The exudation, however, almost entirely disappeared under the milk cure. But the patient, having again exposed himself to cold, the exudation augmented, congestion of the brain ensued, and he died on the 24th September.

Case II.—Francis N., aged 67, Bishop of the Moravian Brothers, suffered for several years from vertigo, for which he found relief in the Marienbad waters. In May he suffered from catarrh and dyspnœa, and had fits somewhat resembling angina pectoris, and also œdema of the feet. The two physicians in attendance diagnosed hydrothorax and ascites, the result of atheromatous affection of the valves of the heart. On my first visit, on the 10th June, I found the breathing accelerated, and the percussion dull at the posterior base of the thorax. Vocal fremitus absent, and vesicular respiration almost inaudible. At the apices of both lungs the respiration is much louder than natural, and almost bronchial in character; the voice resonant; and slight enlargement of the heart on percussion. The two sounds of the heart almost run into each other, and there is a slight blowing murmur with each. Percussion dull over a large surface of the hepatic and infra-mammary regions, and extending upwards slightly beyond the nipple. This sound is caused by effusion into the thoracic cavity of the right side. The lower part of the abdomen is much distended, and gives a dull sound from the umbilical region downwards. Also severe œdema of inferior extremities. Pulse full and bounding, and beats more than 90 in the minute. The tongue very red, and presents two yellow stripes in the middle. Patient is unable to assume the horizontal position. Has to sit up at night, and now and then feels sharp twitchings in the left lung, and in the cardiac region. Cough dry; urine high-coloured and small in quantity. The remedies employed having produced no effect whatever, the physician in attendance agreed to my proposal to try the milk cure. The cure was methodically carried out. The patient's wife, a sensible lady, gave the doses regularly, and the treatment was scrupulously adhered to for five weeks. During that period the flow of urine increased, the dropsy disappeared, and the cardiac sounds assumed a more normal character. After the sixth week the patient took milk thrice daily, and a suitable dinner besides. After the eighth week he was *able to preach*. Two and a-half years have elapsed since, and he still continues in good health. His hearing became impaired a year after the disappearance of the dropsy.

Case III.—Count B., President of the Imperial Council, aged 80, while in the prime of life, suffered from gout. He suffered, in February 1862, from bronchitis, indigestion, and loss of appetite. His two medical attendants feared, with reason, senile decay. Eight weeks later, when effusion into the pleuræ was added to the symptoms above mentioned, I was called into consultation, and placed him under the milk cure. The illustrious octogenarian was under treatment for seven weeks; the effusion disappeared, and he recovered so completely that he was able to undertake a journey to Wildbaden, and thence to the shores of the Atlantic. He kept well for a year and a-half, and could even fulfil his onerous duties.

CASE IV.—N. was suffering from anasarca, and was confined to his bed for two years owing to the enormous size of his body. He had consulted a number of doctors in vain. After much parleying, I succeeded in persuading the patient to undergo the milk cure. He recovered completely, and enjoyed good health for seven years.

The cases of dropsy thus treated being very numerous, I think the four which I have detailed will suffice to prove my assertion.

CASE V. is that of my colleague Dr H., of Peterhoff. I give it in his own words:—"In 1855, in the beginning of March, I suffered at stated intervals from hemicrania of the right side. During my life I was rarely unwell, though I occasionally suffered from pains in the back, in the left shoulder, and in the pectoral region. These pains were referred by my colleagues and myself to rheumatism, and yielded to frictions, with rubefacients. I neglected the hemicrania, which, in April, became intolerable, and assumed a quotidian form. At eight o'clock in the morning, I used to be troubled with slight pain in the nape of the neck, which became more intense as it attacked the temporal region, and still more so when it involved the whole side of the cranium. My sufferings were fearful, and I felt as though my eye was being plucked out. Towards two o'clock in the afternoon the pain relaxed by degrees, leaving me very weak, and with a feeling of weight in my head. At the same time my digestion became deranged, and my liver was enlarged at times, so that it could easily be felt on palpation. All the external and internal remedies suggested by my medical advisers were tried in vain. The hemicrania became worse from day to day, the weight in my head increased, and ended in paralysis of the whole of the left side, along with insensibility in the ends of the fingers. I could have welcomed death. On your arrival in Peterhoff you advised me to try the milk cure, and you saved me. I laid aside all medicines, and commenced taking three glasses of skimmed milk daily, adding an extra glass each day. Later on, I added two glasses daily, and I have thus arrived at taking twenty-eight tumblers in the twenty-four hours. At the end of five weeks I attempted to take some chicken-broth, and, still continuing with the milk, I could, after the sixth week, take fat soup and boiled beef, but restricting myself to twenty tumblers of milk a-day. The following are the favourable results of this treatment:—After the third week sensation returned, the paralysis disappeared entirely, the sluggishness of the digestive organs was remedied, and I regained my activity of mind. After the sixth week, I took, according to your advice, ten salt baths, and then I bathed in the sea. I felt strong and vigorous, and as though I had begun life again." Eight years have elapsed since then, and Dr H. is still in good health.

CASE VI.—Twenty years ago, I treated, for a period of four years, Miss P., aged 16. In her infancy she had suffered from scrofulous eruptions and diarrhœa, and from hooping-cough at the age of eight. When she came under my care she had a dry cough (which grew worse towards evening), and a pain in her throat. The voice was hoarse during the day, and towards evening she lost it entirely. I attributed the aphasia to spinal irritation, and also in part to swelling of the laryngeal glands. This affection soon disappeared, however; but the diarrhœa, severe from her infancy, was obstinate. During good weather the patient felt better, but during winter, which with us lasts so long, she had to keep her bed almost all day. This young lady's parents were very anxious about her: they removed from town to the country, and I had not heard about my patient for seventeen years, when, in February 1863, I happened to be in the town in which they were staying, and was requested by Dr Butusoff to see the lady. She was evidently affected by some serious malady. She was very thin, her complexion yellow and wan, and her features extremely sharp. The diarrhœa had hardly ever left her during all this time. She had from three to seven stools a-day, watery, and of yellowish colour. During summer the disease always abated somewhat. At her thirtieth year the pain in the throat ceased, but was followed by pains in her right side. Treatment had produced no effect, although her diet had also been strictly attended to. The abdomen was enlarged and as hard as marble, and the subcutaneous veins were much distended. Percussion over the lower part of the abdomen was dull. I was unable to ascertain the exact size of the liver, but attributed the pain in the right side to intercostal neuralgia. The catamenia were regular. I advised her to undergo the milk cure, which, except during the first few days, I was unable to superintend. I lost sight of my patient in consequence of a long journey which I had to undertake. A twelvemonth after, I was present at a funeral near to where my patient resided. After Mass, a person, whose face was beaming with health, came up to me and saluted me. It was my patient, entirely metamorphosed by the milk cure. The diarrhœa, which had lasted for thirty-five years, had at last ceased entirely: her figure was plump, and she had regained her strength. She could go out of doors in the coldest weather,—a feat she had never attempted before. At the commencement of the cure she was constipated for ten days; afterwards the fæces became soft, and her bowels were opened once or twice a-day. For seven weeks she took nothing but milk, then porridge, vegetables, fish, etc.: after the sixth month she tried meat, but the diarrhœa reappeared. Now she keeps to her old diet.

CASE VII.—A woman from the provinces told me, several years ago, that the doctor in her village, where intermittent fever was endemic, treated her successfully with milk, to the wonder of his colleagues, when she had the ague. I have forgotten her name, and the name of the physician, as I placed no confidence in the statement at the time. However, I remember having had a case of obstinate intermittent fever, with enlarged spleen, for which I in vain prescribed quinine in all possible doses and shapes. I then tried milk. From the first day the feverish attacks ceased, and the patient was soon radically cured.

The following two cases were observed by Dr Hirsch:—

CASE VIII.—Princess D., a widow, aged 40, of good constitution, born in the Caucasus, and residing in St Petersburgh since her second year. She has had no disease but intermittent fever. Her mode of life has always been luxurious and inactive. *State of patient in* 1860.—The face looks pasty and bloated, and there is large deposit of fat in the subcutaneous areolar tissue; the veins of the lower extremities are somewhat varicose; the lungs are healthy; heart-sounds normal, but the impulse very feeble,—probably a result of fatty degeneration; the belly is swelled, and is sensible to pressure in the ileo-cœcal region: the liver extends to the length of a finger's-breadth beyond the inferior border of the ribs; the left lobe is painful on pressure; percussion shows the length of the spleen to be six inches, and its breadth four; the appetite and digestion are good. The patient complains of vertigo, and a feeling of weight in the head.

In February 1860, prurigo appeared in the upper part of the thighs, accompanied by nocturnal itchings which were insupportable. The eruption gradually ascended toward the abdomen and chest. As a result of the terrible itching and consequent want of sleep, the nervous system suffered considerably. The patient became sullen and very irritable. Some local remedies, and treatment by whey continued for six weeks, relieved the patient somewhat, without, however, curing the disease; for towards the autumn the patient returned to her old mode of life, and the prurigo became intolerable. On the 11th November 1860, the Princess followed Dr Karell's advice and tried the milk cure, which she scrupulously carried out for forty days. The first three days she took four cups,—at eight in the morning, at noon, at four, and at eight in the evening.

From the 14th to the 18th, she still took milk four times daily, and afterwards a little piece of white bread, toasted.

On the 16th November, the itching became more feeble, though the disease of the skin had undergone no apparent change. The patient felt well; the abdomen, however, was as large as during pregnancy. As the pruritus decreased from day to day, and at last entirely disappeared, the patient scratched herself no more, and the cutaneous eruption gradually improved. The affected parts soon regained their natural colour, as sometimes happens in prurigo, the chief symptoms of which are due to the scratching.

Before the treatment had finished, the patient was well. I attended her five months after, and she was in good health. In May 1861, she went abroad.

Case X.—Peter P., aged 65, of a good constitution, and always leading an active life. During the last few years, he had from time to time indulged in excessive use of stimulants. For five years he has suffered from palpitation when walking, and also from dyspepsia and cough. He has a bad appetite and dyspepsia, and also complains of frequent pains and cramps at the pit of the stomach.

Present State, *i.e.*, in September 1862:—Insufficiency of aortic valves, and hypertrophy of the left ventricle. At the base of the right lung the emphysematous lobe descended, with each forced inspiration, beyond the upper border of the liver, down to the eighth rib. Left lung healthy. The anterior border of the liver descends three inches below the ribs. The left lobe very sensitive on pressure; extends into the left hypochondrium. The abdomen is enlarged from accumulation of fluid. The inferior extremities are swollen. The urine voided is a pound and a-half in the twenty-four hours; it is high-coloured, with a deposit, and contains a great deal of albumen. The patient is very weak, and walking across the room brings on dyspnœa. Purgatives, emetics, digitalis, borate of soda, acetate of soda, etc., having produced no effect, I tried, during six weeks, the milk cure, rigorously carried out according to the plan of Dr Karell.

18th September 1862.—The patient commenced with four cups of milk, without bread, per day.

From 21st to 28th.—Raw skimmed milk, four times a-day, with a little white bread.

From the 28th the patient only took milk thrice a-day, from a tumbler to a tumbler and a-half, and some bread; at mid-day, a little milk soup or manna croup, or rice and beef-tea.

On the 21st, there were 2½ lb. of urine passed in the twenty-four hours; the patient feels better, in spite of the continuance of the objective symptoms. There being slight constipation, it was remedied by a rhubarb pill.

26th.—Improvement continues. The patient can take exercise in his room for a whole hour without great difficulty. The urine has increased in quantity to 3 lb., and even more. It still contains a considerable quantity of albumen. The abdomen is not so large, and the swelling of the feet has greatly diminished.

10th October.—Œdema of the lower extremities has disappeared entirely. No fluctuation can be detected in the abdomen. The bowels are regular. The patient is very well. "I feel," says he, "twenty years younger." Five pounds of urine are passed daily; it still contains albumen.

20th.—Of all the grave symptoms formerly observed, none remain now but the insufficiency of the semilunar valves, emphysema of the right lung, and slight enlargement of the liver, which, however, is still painful to the touch. And all these satisfactory results were accomplished solely with the assistance of milk and without the employment of any drug,—for the rhubarb pills, given at the commencement, can only be regarded as auxiliaries.

In the beginning of November, the patient felt perfectly well, attended to his business, and frequently assured me he still felt twenty years younger. Unfortunately, however, his love for alcoholic drinks returned, and, at the close of a feast at which he had eaten and drunk a great deal, a stroke of apoplexy carried him off.

I shall conclude this series of cases by citing a few which were observed at the Hospital of Tübingen, and published in Dr Schmidt's Inaugural Dissertation. I have Professor Niemeier's permission to quote them at length.

CASE XI.—G. Schuler, aged 26, labourer, unmarried, entered the hospital on the 14th January 1863. He comes of a healthy family and has hitherto, himself, been quite well. He never had scrofula. At eight, he had the measles, but since then, he has always enjoyed good health. He states he never had syphilis. From his tenth year he has taken alcohol, and sometimes to excess. Nevertheless, his health never suffered until the last two years. Since then, the cervical glands have suppurated, and there has been œdema of the ankles. In June 1862, the patient was stabbed, in a drunken bout, in seven different parts of his body. A wound of the chest, not penetrating, however, was followed by such severe hæmorrhage that he was carried home senseless. He gradually recovered, though his wounds were six weeks in healing. Fifteen days after this event, the œdema of the ankles re-appeared, to disappear no more. His face also, from that date, assumed a pale and wan aspect. For three weeks the patient himself remarked swelling of the belly, which was followed by dyspnœa, cough, and expectoration. For all that, however, he appears to be in tolerably good health, and has remarked no change in his urine.

Present State.—The skin and mucous membrane are pale. The intercostal spaces cannot be seen owing to the œdema. General anasarca, but particularly of lower extremities. Hydrothorax well marked and more on right than on left side. On the right side the dull sound on percussion commences at the upper border of the third rib, and of the superior border of the mammary region, —posteriorly, at the sixth spinal vertebra. The pulse is not characteristic; the heart sounds are loud and distinct, and the apex beat is felt in the fifth intercostal space; hydropericardium was diagnosed. The epigastric and the two hypochondriac regions are a little bulging, but there is no swelling. Ascites is commencing. Urine contains much albumen, and deposits a thick whitish sediment, consisting of uric acid and salts; there are also fibrinous cylindrical casts in large number covered with epithelium cells, either entire or undergoing fatty degeneration. Reaction, acid; no sugar present. The quantity is not quite normal, varying from 1200 to 1400 c. c. in the twenty-four hours; spec. grav., 1020 -1021. Weight of body, 138 lb. 10 oz.

Progress of the Disease.—Treatment.—Strong diaphoresis. The patient takes a hot bath of 37° Cent. When in it the heat of the water is raised to 42°, and he remains there thirty-five minutes, after which, he is wrapped up in a hot blanket. He is then allowed to perspire for one or two hours. The patient is weighed before and after each bath.

20th January.—First bath. After perspiring, the patient weighs half a pound less than before, but the dropsy is still increasing.

21st.—The patient does not hear well; colic; pains in the left arm.

24th.—Colic; twelve watery stools, followed by severe perspiration, analogous to dropsy of the skin. The great loss of liquid by the intestinal canal accounts for the quantity of urine passed in the twenty-four hours, being only 840 c. c.; spec. grav., 1020. Pulse, 92; temperature of body, 37·9° C. No vomiting.

25th, morning.—Quantity of urine 1060 c. c.; spec. grav., 1020. Colic towards evening, and seven watery stools. No headache; hearing returned.

26th.—Stools very watery. Urine 1300 c. c.; spec. grav., 1020. To stop the diarrhœa. Kino, columba, and catechu, were ordered in a mixture. The diarrhœa is better. The baths had been suspended during the diarrhœa. Œdema of the ankles kept increasing. No signs of uræmia.

1st February.—Diarrhœa entirely stopped. Baths. Weight before bath, 151 lb. 8 oz.; after bath, 151 lb. As the urine is small in quantity, squills were given; but in spite of the baths and diuretics, the dropsy of the subcutaneous cellular tissue and the anasarca increased.

3d.—Weight before bath, 153 lb. 8 oz.; after bath, 153 lb.

5th.—Weight before bath, 158 lb.; after bath, 158 lb. 8 oz. He feels well.

8th.—Weight before bath, 161 lb.; after bath, 160 lb. 8 oz. The scrotum is very much swollen and the penis resembles a postman's horn.

9th.—Weight before bath, 162½ lb. No perspiration. Lemons ordered for the next six days.

10th.—Weight before bath, 164 lb. 10 oz.; after bath 163 lb. 8 oz.

11th.—Weight before bath, 165 lb. ½ oz.; after bath 164 lb. ½ oz.

12th.—Weight before bath, 168 lb.; after bath, 167 lb. The urine is less copious; much albumen. Patient feels well.

13th.—Weight before bath, 168 lb. 4 oz.; after bath, 167 lb. 4 oz.

14th.—Weight before bath, 170 lb.; after bath, 168 lb. ½ oz.

15th.—Weight before bath, 170 lb. 4 oz.; after bath, 169 lb. 8 oz.

16th.—Weight before bath, 171 lb.; after bath, 171 lb. 8 oz. Œdema and pain of the right arm. Diuretics.

17th—Pains in the arm prevent patient taking the bath. They are probably caused by tension, the result of the œdema. Bandage round the arm. Weight increased one pound.

18th.—Weight before bath, 176 lb. Increase of weight four pounds in one day. General anasarca is considerably great. The effusion in the thorax has already reached two inches below the spine of the scapula on the right side; on the left, the effusion is not so extensive. There is also pulmonary catarrh and considerable hydropericardium. The pulsations of the heart are not clear. Pulse 120. Large quantity of albumen in the urine.

19th.—Pains in the arm continue. Weight diminished twelve ounces.

21st.—No increase in weight. *In statu quo* up to 24th.

25th.—Slight scarifications for the œdema. Pulse 112, small.

26th.—Weight diminished two pounds. The swollen face has become thin. Hydrothorax, hydropericardium, and the anasarca in the other parts of the body present no change. Pulse, 112; respirations, 26; temperature, 38° C.

27th.—Weight increased one pound. Pulse 108.

From *1st* to *3d March.*—Increase of œdema; patient confined to bed; severe pains in the left leg, which is of enormous size from the œdema; severe headache; flashes of light before the eyes, and sight impaired; pulse, 124; diuretics, slight improvement on the following day.

10th.—Pains in the leg have ceased; little headache; weight diminished 2 lbs.; weight, 168. Ordered borate of soda.

11th.—Violent headache; sight and hearing normal.

12th.—Headache still worse, and concentrated in the temporal and occipital regions. Vomiting twice; nothing peculiar in vomited matters. Sight and hearing normal. Ordered flowers of benzoin; application of ice. Four watery stools. During the nights of the 12th and 13th March the patient slept well; he feels better; pain in the head diminished; pulse, 100; little urine.

14th.—Increase of urine; general health good.

18th.—Weight, 171½ lb.; during the last four days weight has increased.

21st.—A bath; weight not diminished, being 173 lb.; small quantity of urine.

24th.—Weight, 175½ lb.

25th.—Strong perspiration; little urine. *The weight is increasing gradually, and reached its height* on the 28th, when the patient was 180 lb. He has thus gained 42 lb. since his admittance.

The milk cure in combination with powerful diaphoretics was ordered. The patient took, from the 28th to the 31st, three pints of milk. On the 30th he had two eggs into the bargain.

From 1*st* to 3*d April.*—Four pints of milk, and two eggs per day.

From 4*th* to 10*th.*—Five pints of milk, two eggs, and one-half pound of bread per day.

From 11*th* to 15*th.*—Six pints of milk, two eggs, and one-half pound of bread per day.

From 16*th* to 26*th.*—Five pints of milk, one-half pint of wine, one-half pound of bread, and two eggs.

On the second day of the milk cure, the patient remarked that he perspired more freely after the bath than he had hitherto done, and that the quantity of urine had increased. The truth of his observation was proved by the scales.

Weight, on 1st April, before bath, 176 lb.; after bath, 174 lb. Amount of urine, 1500 c. c.; spec. grav., 1020. Much albumen.

2*d.*—Weight before bath, 172¼ lb.; after bath, 170½ lb. Amount of urine, 1685 c. c.; spec. grav., 1014. Hydrothorax diminished half an inch.

3*d.*—Weight before bath, 161 lb.; after bath, 159 lb. Effusion between pleuræ only discoverable at base. No humid crepitation. Hydropericardium has also diminished.

6*th.*—Weight before bath, 155½ lb; after bath, 153½ lb. Amount of urine, 2200 c. c.; spec. grav., 1011. General health good.

7*th.*—Weight before bath, 152 lb.; after bath, 149 lb. Amount of urine, 2000 c. c.

8*th.*—Weight after bath, 146 lb. Amount of urine, 2020 c. c.; spec. grav., 1016.

9*th.*—Weight before bath, 145 lb.; after bath, 143½. Amount of urine, 1900 c. c.

10*th.*—Weight before bath, 140 lb.; after bath, 140 lb. Amount of urine, 2000 c. c.; spec. grav., 1013·5.

With regard to the thoracic effusion, the sound on the left is clear, but on the right inferior border it appears a little dull. The liver and the stomach are no more displaced. The hydrothorax has disappeared almost entirely, but the legs are still swollen.

11*th.*—Weight before bath, 136 lb.; after bath, 135 lb. Quantity of urine, 2000 c. c.; spec. grav., 1013.

12*th.*—Weight before bath, 133 lb.; after bath, 131 lb. General health good.

13*th.*—Weight before bath, 130 lb.; after bath, 127 lb. Urine, 2100 c. c. Œdema of legs almost entirely gone.

14*th.*—Weight before bath, 125 lb.; after bath, 123½ lb. Urine, 2000 c. c. Vesicular breathing heard all over the chest.

15*th.*—Weight before bath, 123 lb.; after bath, 121 lb. Urine, 2200 c. c. Œdema of left leg almost entirely disappeared, although the patient has been on his feet nearly all day. A little anasarca at the lower part of the leg; feels very weak after the bath, and has vertigo, and vomiting.

16*th*.—Weight increased one pound.

18*th*.—Weight increased another pound. Patient feels well however.

19*th*.—Weight, 123 lb. Œdema only to ankle, and at prepuce.

20*th*.—Weight decreased half a pound.

21*st*.—Weight increased one pound; milk administered systematically.

22*d*.—Weight the same.

23*d*.—Weight, 124 lb. 12 oz.; after bath, 123 lb.

24*th*.—Weight, 124 lb.; after bath, 122 lb.

25*th*.—Weight, 123 lb. No bath. The patient took from that date six pints of milk, half a pound of bread, and two eggs per day.

26*th*.—*He weighs* 120 *lb. after the bath, or* 18 *lb. less than he weighed on his admittance, and from* 58 *to* 60 *less than he weighed when the dropsy was at its height. Œdema of the skin and the effusion into the serous cavities have entirely disappeared.* The urine, however, still contains albumen. Up to the 29th April the weight remained the same, the patient at that time weighing 118½ lb. He always feels well. Once a slight attack of colic was removed by a few drops of laudanum. The patient refused to continue the milk cure in consequence of the nausea which he felt; but when it left him he reoommenced the treatment.

3*d May*.—Patient left hospital. Weight, 120 lb. Appearance very good, but still an abundance of albumen in the urine.

19*th*.—Re-entered hospital in consequence of the reappearance of the swelling in the inferior extremities. Abscess in one of the right cervical glands. Weight, 136½ lb. Ordered milk treatment, viz., six pints, half a pound of bread, and two eggs. Abscess opened. During the treatment of the abscess no baths were taken.

25*th*.—Weight, 121½ lb. *In five days the patient had lost* 14½ *lb.* The œdema diminishing daily.

30*th*.—Œdema visible only at ankles; patient feels well; much albumen in urine, which is of a bright yellow, and leaves only a slight deposit.

3*d June*.—Weight, 122 lb. Felt quite well, and left hospital. Since then the patient has kept quite healthy during the whole summer and autumn. He was able to work regularly at field labour, and to thrash corn. Troubled with headache from time to time, particularly when there was a change in the weather; vomiting sometimes, but inoffensive, and free of blood.

These symptoms returned more and more frequently, and at last became quotidian. From the month of November the headache had continued, and there was vomiting after almost every meal. The patient is obliged to confine himself to particular articles of diet. He continued his occupation, however, up to the 9th November. That evening he came home quite exhausted, and with a severe feverish chill.

After that he kept his bed delirious, vomited his food, always complaining of headache, and pain in the back. His parents then sent him to Tübingen, and he entered the hospital on the 14th November in such a miserable condition that we were even unable to examine him. It was the last time he returned to us. He was taken to bed. The following symptoms were observed:—Face red, and feverish body; pulse 108, full; temperature 39·9° C.; resp. 40. Commencement of acute congestion of the lungs. Unable to auscultate patient, for every time he is placed in a sitting posture he complains of pain in the back. Hypertrophy of heart easily made out; sounds loud. At the third left intercostal space, and from that point down to where it joins the sternum, a slight murmur immediately following the first sound was audible. Left pupil more dilated than right. No headache, no vomiting, no œdema; urine contains much albumen. Patient is much agitated, particularly at night. He has constant delirium, and speaks loudly. Ordered, infusion of senega, leeches behind the ears, applications of ice to the head.

15*th.*—Pulse 108, full; temperature, 39·5°; resp. 40. Crepitating rales much louder. On the following night the pulmonary congestion still greater.

16*th.*—Pulse feeble, undulating, but not intermittent; resp. 36; temp. 39·5. No more headache.

17*th.*—Patient died at seven in the morning. Post-mortem examination shows extensive congestion of the lungs; pneumonic consolidation to the size of a hen's egg, in the inferior left lobe. Hypertrophy of heart, particularly of left ventricle. In the right auricle a large tendinous clot; fluid in the pericardium somewhat increased, and yielding, according to Professor Hoppe's analysis, traces of urea; chronic inflammation of lining membrane of stomach; kidneys in third stage of Bright's disease; purulent meningitis commencing at the basilar process and extending down the whole length of the spinal cord.

Case XII.—Bright's disease; anasarca. Milk cure. After its continuation for six weeks, patient weighs 24 lb. less, and left the hospital in good health. A year after he was still in good health, though the urine still contained albumen.

Case XIII.—Bright's disease; anasarca; hydropericardium; hydrothorax; ascites. Milk cure; no effect; death.

Case XIV.—Double hydrothorax. Bright's disease. Milk cure and diaphoretics. Very good results. In three weeks patient's weight diminishes 36 lb.; in good health the next month; no more albumen in the urine.

Case XV.—Berliner Klinische Wochenschrift; observed at Tübingen. Dropsy. Bright's disease. Milk cure. Œdema disappeared; but after six weeks the patient was unable to continue with the milk, even mixed with arack. Perfect recovery and no return of the disease.

I have given you the history of several diseases as samples selected from upwards of 200 cases, when the milk cure was scrupulously carried out, to the exclusion of other remedies, and where I procured excellent results, and notably in hopeless cases in which other remedies were tried without benefit. I am, however, far from considering this mode of treatment as a panacea, and would regret exceedingly, if, by exaggerating its virtues, I were the means of making calm and conscientious practitioners lose faith in it.

Were I asked to which of the substances that this fluid is composed of can its curative virtues be attributed—whether to the caseine, or to the sugar, or to the salts, or to the fat, or to the exact relations in which these various constitutents are combined—were it asked even what name I should give this mode of treatment, whether it is diaphoretic, or diuretic, or resolvent, or tonic, I confess I should feel at a loss for an answer. Perhaps some one else may find a solution to those questions. Perhaps even I myself may some day have occasion to estimate exactly the ingesta and the egesta in the milk cure, and to solve the question with regard to the immediate results which follow therefrom. But the healing art would be very sterile if we were to confine ourselves to the use of remedies, the effects of which we could estimate in the minutest details; and if physicians, in treating the patients, were to place themselves under such restrictions, they would be reduced to complete inaction.

In fact, there is only a very small number of medicines of which we thoroughly understand the action; and many among them, such as digitalis, sulphate of quinine, and others, were successfully employed before as well as after their effects upon the constitution were known. To understand the milk cure it would be necessary to subject a healthy individual to a certain diet and to watch its effect.

There can be no doubt that if a man, instead of consuming all sorts of food, as is generally the case, were to confine himself to the most natural and simple diet, he would be placed under totally different conditions of health. He could not, after a certain time, remain what he was before. I go even further: for I hold that, among all the alterative and modifying methods, there is none which offers, *a priori*, more certainty of working a complete change in the constitution of a patient than milk.

Although the results of similar researches ought to prove of paramount interest to me, yet I confess to a suspicion that few explanations will go beyond what I have just stated with regard to milk,—namely, that it has a peculiar influence on, or is in fact to a certain extent, the controller of absorption, of excretion of the animal heat, etc., in those cases which have been successfully treated by it. For although we may thoroughly understand the physiological effects of a remedy, yet it by no means follows that such knowledge will always serve as an indication for its use in any given case. I do not think I could name a single medicine which by the above-mentioned means has gained the confidence of practical physicians.

I now arrive, by way of conclusion, at the indications and contra-indications of the milk cure, for it is by determining these, that I shall give a practical turn to this essay. In this respect, I shall confine myself to simply adverting to the natural results of the many facts, empirical and therapeutic, already referred to.

And it is the path that should always be followed to advance the science of therapeutics,—a subject unfortunately much neglected by morbid anatomists and by many eminent clinical teachers of our day. Let us meanwhile be satisfied if we know with regard to a certain number of remedies what *disease we can cure* with their aid. With the greater number of remedies we have no acquaintance unfortunately. Not until we have decided this first question can we put the second—"*How can the cure be explained?*"

In summing up the phenomena always observed among the patients cured or treated by other physicians and myself, I must enumerate: An intractable state of the blood, impoverished to the utmost extent, and general dropsy; disordered innervation, assuming the forms of hysteria, or hypochondriasis; obstinate dyspepsia, neither the result of congestion of the stomach nor of ulceration, nor of cancer of that organ; in fact, catarrhal, rheumatic, and gouty affections, as also nervous maladies not the result of a *local disease*, but of quantitative and qualitative defects in the fluids; or, to speak more clearly, a constitutional disease. If the cause of the disease was apparently situated in the organs of digestion, the more strongly was I tempted to try this cure. I have thus cured, or very much relieved, chronic irritations of the pharynx and of the œsophagus, ulcers of the stomach, and similar diseases of the digestive tract. These *gastric cases* formed the greater portion of the 200. Among these, satisfactory results were obtained in a very short time. The desponding patient became lively, the gloomy countenance brightened up, the big belly decreased in size, and, as a consequence, many other unpleasant symptoms disappeared; in a word, the patient felt quite a new man.

And even where the seat of the malady was not always as clear as in the cases above cited; but where the disease of any organ seemed to be connected with some derangement of the digestive tract, I have invariably tried the milk cure. For I thus produce a good result, simply by regulating the diet, and by excluding indigestible articles of food. And I have thus frequently had the satisfaction to see a complete cure effected by such simple means in cases where deep-seated organic disease was suspected. My own experience and that of other physicians has shown that great improvements, and even almost a complete feeling of health, have attended this treatment, when employed in cases of organic disease of the heart, of advanced degeneration of the kidneys, etc. Taking into consideration the fact that hypertrophy of the heart and the central congestion, as well as increased bronchial secretion which result therefrom, are frequently occasioned by disorder of the abdominal circulation, I think I have found an exact indication for the milk. I have modified the milk cure according to circumstances in treating plethoric persons.

The fatty degeneration of the arteries, and the consequent friability being so frequently one of the determining causes of apoplexy, I think we shall find an exact indication in that disease for the use of milk. Neither can I say that constitutional debility was common to all patients whom I placed under the milk cure. On the contrary, I have made persons of a florid complexion undergo the treatment—persons of muscular build and a full pulse, who are generally ordered a temperate regimen, and who, to prevent congestion and apoplexy, take bitter and saline solutions with benefit. For advanced tuberculosis we have no remedy. In cases where this disease is complicated with tubercular ulceration of the intestines, I cannot foretell very good results from the use of milk.

Fever is no contra-indication to its use. The utmost caution, however, should be used when milk is administered in such cases. At the commencement the doses should not be increased too speedily, for the patient's stomach will not absorb more milk than it can digest.

To sum up, I have already strongly expressed myself against the practice of extolling the milk cure as a panacea; nevertheless, I feel no hesitation in declaring that the number of cases for which I prescribed the milk cure with a great degree of confidence is very considerable, and that in these cases, I could have expected no good results had I resorted to any other mode of cure.

ARTICLE II.—*Two Cases of Aphasia and Right Hemiplegia, with Dissections.* By J. WARBURTON BEGBIE, M.D., F.R.C.P.E., and WILLIAM R. SANDERS, M.D., F.R.C.P.E.

THE two following cases further illustrate the subject of aphasia, which has already been brought under the notice of readers of this Journal:[1]—

DR WARBURTON BEGBIE'S CASE.

Rheumatic Fever—Valvular Disease of Heart—Aphasia and Right Hemiplegia—Embolism of Left Middle Cerebral Artery.

M. A., æt. 22 in March 1866, was the child of healthy parents, both of whom survive. She had three sisters, all living and in good health. At 13 years of age she had rheumatic fever, and at that time the heart in all probability became affected. Two subsequent attacks of rheumatism occurred before she reached the age of twenty. She was subject for a considerable period to faintings; latterly these had ceased.

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[1] No. for March, pp. 811, 856, and 860; for May, p. 1046; for June, p. 1142.

She was first seen by me about twelve months ago, and was at that time suffering from general weakness, breathlessness, and palpitation, with tendency to dropsical affection. The area of precordial dulness was somewhat increased; a double blowing murmur was audible at the base of the heart, and a readily distinguished systolic murmur at the apex.

M. A. continued to enjoy somewhat improved health till about ten weeks before her death, when, after exposure to considerable fatigue, and having suffered much mental distress, the dropsical swelling underwent very marked as well as rapid increase. The œdema was no longer confined to the lower extremities, but presented itself in the upper extremities in the face and trunk. The urine at the same time became greatly diminished in quantity, but not coagulable. Fourteen days before death she took to bed; her strength became greatly reduced, and the mind wandered.

On Saturday evening, 23d June, she became very restless, and spoke a great deal. On the same night, about ten, she appeared to take a fit; suddenly, she lost power of the right side, and became unable to speak.

I saw her on Sunday forenoon, the 24th. She was then somewhat flushed in the face, profoundly hemiplegic on right side, with the face drawn to left side. She was aphasic—evidently comprehending but quite unable to answer questions.

I saw her in the evening of the same day, in precisely the same condition. On the 25th, she was evidently much weaker; had taken little food, and only with difficulty swallowed a little soup and brandy. She recognised me and endeavoured to speak, but could not. When called by her name, Mary, she evidently listened with attention. On the 26th, she was sinking, and died quietly on the afternoon of that day.

I formed the opinion that the right hemiplegia and aphasia depended in all probability on the sudden occurrence of embolism, and thought it probable that a portion of fibrinous deposit from the valvular apparatus of heart (mitral) had been carried into the systemic circulation, and obstructed the middle cerebral artery in the left hemisphere.

I requested Dr Grainger Stewart to conduct the post-mortem examination on the 28th June, with a special view to the determination of the correctness of this diagnosis, and asked Dr Sanders to be present. The following is Dr Stewart's account of the morbid appearances:—

The heart was hypertrophied, and weighed thirteen ounces. The aortic valves were thickened at their margins, but free from vegetations. The mitral valve was also thickened at its margin, and its auricular surface coated with numerous warty vegetations, which extended a short distance down the chordæ tendineæ, and for some distance upwards on the endocardium of the auricle. There were also patches of old fibrous thickening on the endocardium of both auricle and ventricle. Very slight thickening of margins of the pulmonary and tricuspid valves. Atheromatous deposits in both aorta and pulmonary artery. Several embolic patches in different stages were found in the spleen and in the kidneys. Most of them were old, one or two in the spleen recent. The other thoracic and abdominal viscera presented nothing remarkable.

Skull and dura mater natural. Over the greater part of the convex surface of left anterior lobe there was some recently extravasated blood in the subarachnoid space, and among the vessels of the pia mater. The same condition existed in the fissure of Sylvius, and markedly over the convolutions of the island of Reil. The membranes elsewhere were natural. The left middle cerebral artery beyond its second considerable branch, just where it passes on to the insula, was completely obstructed, presenting the appearance of a firm round cord. At the point of bifurcation about the middle of the insula, a fawn-coloured fibrinous nodule completely closed the vessel, and from this a red clot extended half an inch forwards and a quarter of an inch backwards along the artery. The appearance of the fawn-coloured clot corresponded with that of the vegetations on the mitral valve. The cerebral substance in general was somewhat pale, but free from disease. The left corpus striatum was normal, but the white medullary substance external to its posterior half presented numerous vascular and sanguineous points. No granular corpuscles were seen on microscopic examination. No other lesion found.

One other case similar in several particulars has occurred to me within the last few years. In that instance the valvular lesion of the heart had existed for a lengthened period in a gentleman of sixty years of age, when suddenly aphasia, at first amounting to considerable loss of speech, but changing after a brief period to mumbling articulation and misapplication of words, with very remarkable loss of memory of names, came on. The paralysis was so slight as to be doubtful. This gentleman is now in fair health, and the aphasia has in great measure disappeared; but when excited, the difficulty of speech is still marked, and he has at such times to seek for words. He has also been subject to occasional convulsive attacks with temporary loss of consciousness. It is worthy of observation that at the time of the cerebral seizure the mitral bruit became distinctly altered in character. I may perhaps be able to furnish a fuller account of this interesting case, through the kindness of Dr Hislop of North Berwick, under whose care the subject of it has been and still is.

DR SANDERS' CASE.

Right Hemiplegia—Total Loss of Speech—Softening in the Left Island of Reil and Parts adjacent—Obstruction of Left Middle Cerebral Artery.

Daniel Cameron, aged 74, shoemaker, was admitted to Ward No. IV. of the Royal Infirmary of Edinburgh, under the care of Dr anders, on May 30, 1866.

He was a strong-looking man, above the average height, and had been a hard drinker.

On the day preceding his admission, he is reported to have had a sudden attack of apoplexy at 9.30 p.m. When seen by Mr Muir, student of medicine, a quarter of an hour afterwards, he was semicomatose, and breathed stertorously; when roused or loudly spoken to, he looked up, but did not speak.

On admission, he was hemiplegic of the right side. The right arm was completely motionless and flaccid; the leg was slowly moved voluntarily, when the skin was pinched so as to produce pain. The face was flaccid on the right side, and somewhat drawn to the left. The usual winking movements of the eyelids were not affected. He was quite conscious, but appeared stupified, with a tendency to become comatose. When roused, he noticed objects about him, but could not be made to speak, or protrude his tongue. Deglutition exceedingly difficult. Respirations irregular, eighteen per minute. The breathing, at first stertorous, becomes gradually slower and fainter, until it stops, when, after an interval of about fifteen seconds, it is renewed apparently by a voluntary effort. Some mucous rales are heard in the trachea and lungs. No paralysis of the trunk or neck; sensibility is preserved in the paralyzed parts. Pulse 56, intermittent and irregular. Arteries enlarged and tortuous. Heart acts tumultuously: no murmur. (Bowels to be evacuated. Strength kept up by nutriment, administered partly by enema.)

On June 4th, the patient had regained the power of swallowing, though still with difficulty. Consciousness had completely returned; when spoken to, he made efforts to move his lips and speak, but uttered no words.

On June 9th, the improvement which had taken place since admission now gave place to symptoms of increasing weakness. Urine and fæces passed involuntarily. The breathing became laboured and stertorous, as the patient gradually sank. He died about mid-day of 11th June.

The *autopsy* was performed by Dr Grainger Stewart, Pathologist to the Royal Infirmary. The brain was removed for careful examination, and the following detailed report was drawn up by Mr Turner, Demonstrator of Anatomy in the University, Dr Stewart, and myself.

Nothing abnormal was observed on the upper surface of the cerebrum, nor in the hemispheres above the centrum ovale majus. On the level of the latter, the surface of the section in both hemispheres presented more numerous sanguineous points than usual to within one and a-half inch of the posterior margin. There was a softened portion of the medullary substance, about one inch long by half an inch broad, immediately external to and parallel with the posterior half of the left corpus striatum. About one inch and a half in front of this, and half an inch external to the anterior cornu, the medullary substance exhibited a small extravasation, halt an inch by a quarter of an inch, of a dull red colour.

At the base of the brain, when the left temporo-sphenoidal lobe was drawn to one side, and the membrane removed from the surface of the island of Reil, a well-marked *softening* was seen on the *outer part of that convolution of the insula* which is situated almost on a line with the anterior perforated spot. The affected gyrus was so soft as to be almost diffluent, and the grey matter of the surface presented an eroded appearance. The membranes were firmly adherent, and tore away portions of the softened substance when they were removed. The softening extended across the groove, which separates the insula from the lower end of the ascending frontal gyrus. The superficial part of the grey matter of the under surface of the gyrus was also softened. The softened parts were of a yellow colour, interspersed with minute red spots. A similar softened eroded condition was presented by the grey matter at the posterior part of the infero-frontal sulcus, and extended into the ascending limb of the Sylvian fissure, affecting a portion of the grey matter at the bottom of its lower extremity. One of the secondary sulci in the posterior part of the infero-external frontal gyrus was similarly altered, but to a less extent. A slight degree of the same affection existed on the under surface of the same gyrus, for a limited distance, in front of the last-described spot.

A vertical transverse section being made through the left anterior lobe on a line with the posterior margin of the orbital lobule, the surface of section exhibited the ventricular portion of the corpus striatum quite normal, except that it presented the sanguineous points before mentioned. But at the anterior end of the corpus striatum, a small portion of the *grey extra-ventricular nucleus* and of the white medullary substance immediately external to it were completely softened and broken down. A little further outwards, the white matter was more firm, but was found, on microscopic examination, to contain a few granular corpuscles scattered among the nerve-tubes, which preserved their continuity. Still further outwards, the white matter was in relation to the bottom of that part of the infero-frontal sulcus, which has already been described as exhibiting a softened erosion of its grey matter, and it could now be seen that this lesion extended through the whole thickness of its cortical grey substance.

A second vertical transverse section made parallel with the first and a little behind it, through the softened convolution of the island of Reil, displayed a much greater extent of *softening and breaking down*, not only of almost the whole *extra-ventricular nucleus* of the corpus striatum, but of the *external medullary substance* which extended between it and the softened convolution of the insula previously described. A vertical longitudinal section, through the remaining part of the corpus striatum, showed that the softening extended backwards quite to its posterior end. The optic thalamus was quite healthy. In the softened parts, the nerve tubules were ken up and destroyed; granules and granular cells very abundant. pt the punctated vascular appearance already described, there was no morbid condition of the right hemisphere, nor of any other part of the encephalos.

The vessels at the base of the brain were atheromatous; the *middle* cerebral artery of the left side was completely obstructed by a firm, partially decolorized clot. Minute vessels from the softened portions of brain were found fatty, and surrounded by granular cells. Similar vessels from apparently healthy portions of the right as well as left hemisphere were found, on microscopic examination, to be fatty.

Pericardium natural; heart hypertrophied and dilated, its substance pale and fatty; valves competent; lungs voluminous, emphysematous at their margins, congested throughout, with some patches of pulmonary apoplexy; liver congested, somewhat fatty; spleen natural; kidneys enlarged and congested; gastro-intestinal canal normal.

This case, except for its shorter duration, is very similar to the one which I recorded in the *Lancet* of June 16th last (p. 656),[1] and supports the opinion there expressed, that if there be a distinct localization of the lesion producing aphasia, the island of Reil may not improbably be the spot. It will be noticed in the case now reported, that while the outer convolution of the left insula and the white cerebral substance adjoining it, as far inwards as the extra-ventricular nucleus of the corpus striatum, were destroyed by disease, the infero-external frontal convolution, where Broca localizes the lesion in aphasia, was scarcely touched.

ARTICLE III.—*Case of Air found in the Chambers of the Heart.* By FRANCIS HENDERSON, M.D., Helensburgh.

As a title to this paper, I have chosen the most uncommon feature in a case which displayed many peculiarities.

I propose, in the following pages, to give a short account of the *whole* case, partly because it may prove of some interest in itself, and also because the explanation given of the air in the heart's cavities is founded upon a general view of the conditions present both during life and after death.

The record of the case, when it came under observation, is taken from my note-book.

January 14, 1865.—Jessie M., about two months old. The child sucks eagerly, although interruptedly, frequently letting go its hold of the nipple. Besides the breast, it takes a quantity of arrowroot, etc. The digestive organs have been regular since birth. Notwithstanding, the child is pale and very thin, and has a feeble cry. The chest is distorted, being bulged forwards and upwards. The ribs are more nearly horizontal than natural, and the intercostal spaces wider. The movements of the chest are laboured. During inspiration, which is attended with great effort, a deep hollow forms in the neck just above the sternum. Above the clavicles, in the inferior triangles of the neck, hollows appear at the beginning of the act of inspiration, but before its completion, are replaced by a bulging fulness. The epigastric and neighbouring regions of the abdomen are drawn in instead of being protruded as in normal infantile inspiration. During expiration the walls of the chest fall but little.

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[1] An abstract of the same case occurs in the proceedings of the Med.-Chir. Soc., p. 1142, in the June number of this Journal.

The infant has no cough, and no abnormal sound is heard in the chest, which is resonant to percussion. When not sucking or asleep, the child lies with its tongue protruded from the mouth, and rolling from side to side. On looking into the mouth and depressing the tongue with a spoon, the arch of the soft palate is seen to be very small, and so low as almost to scrape the upper surface of the tongue near its root. The uvula, which is very large, lies on the tongue, on the surface of which it is trailed backwards during inspiration, and sometimes disappears, occasioning a good deal of choking and struggling for breath.

These were the main outlines of the case. They plainly indicated that respiration was the function at fault, and that the weakly state of the infant, in spite of its vigorous digestion, was due to the chronic asphyxia from which it suffered. The seat of the obstruction to respiration was pointed at by the interrupted sucking, and still more distinctly by the attitude of the tongue when the child was not sucking or asleep,—protruded; and the cause of the obstruction (or at least a sufficient cause) was finally determined by physical examination.

I got Dr Finlay to see the little patient with me. He agreed with my view of the case, as to the *origo mali*, and seconded me in what I proposed to do, which was to remove the uvula together with a small portion of the soft palate. It was obvious that if nothing were done, the constant and ever increasing dyspnœa would certainly prove fatal. On the other hand, the infant was so young and feeble, and so much deformity of the chest already existed, that even supposing the operation contemplated could entirely remove the cause, —the obstruction to respiration,—still the prospect of recovery was small. However, we thought it right to give the child the chance; and so having explained to the parents that if there was much hæmorrhage, the child being so feeble, might die in our hands from suffocation, I proceeded to perform the little operation. Taking hold of the uvula as it was lying on the tongue with a pair of catch-forceps, and drawing it well forward, I clipped round its point of attachment to the soft palate, and so removed it. There was no hæmorrhage of consequence.

On the following day, when I saw the child, the breathing was decidedly relieved, the child sucked longer at a time, the cry was stronger, and it seemed altogether somewhat better. Unfortunately the improvement did not last. In the course of a few weeks, the spiration became as difficult as before the operation, and the distorted chest walls grew more distorted. The inferior triangles of the neck became still more full and bulging, and, besides this, the tongue, which was still protruded and rolling about, began very evidently to enlarge. It was conjectured that this latter phenomenon might depend on venous congestion, from the obstruction which the blood encountered in entering the chest from above. That such an obstruction really existed was further evidenced by the fact that, by the 10th of February (three weeks after the operation), œdema of the face began to show itself. This symptom grew more prominent every day. A striking contrast was presented by the lower half of the body. Here not a trace of œdema existed, but there was great emaciation, and the skin hung in loose folds.

This observation suggested the presence of some undiscovered cause of hindrance to the return of blood from the head and neck; and further, it was thought not improbable that this undiscovered source of mechanical pressure had some share in producing the dyspnœa originally, and in causing it to return after its partial relief by operation. These conjectures, however, as we shall presently see, were not supported by the post-mortem examination.

On the 16th of February, at four A.M., the child died. Death was not sudden. Next day, at twelve o'clock noon, thirty-two hours after death,—weather, hard frost,—an examination of the body was made.

There was not the slightest trace of putrefaction in any part of the body. Both lungs were emphysematous; they were much inflated, and did not collapse on opening the chest. The apices were most affected, and were of a yellowish-white colour. The emphysema was not merely *vesicular*, but also *extra-vesicular;* air-bubbles were seen lying under the pleural covering, especially numerous at the apices of the lungs. There were no pleural adhesions, and no tubercles.

When the pericardium was opened the heart was found decidedly enlarged, and it appeared as if considerably distended. After removing it from the body the right ventricle was first opened and found full of *air-bubbles*. The left ventricle was discovered to be similarly filled.

The air-bubbles, for the most part, rapidly collapsed, leaving some entangled by the cords of the valves, and by the *musculi pectinati.*[1] Both auricles and ventricles were free of clots, and when the air-bubbles collapsed only a very small quantity of fluid blood remained. A foramen, large enough to admit a wood pencil, was found in the ventricular septum, thus connecting the two ventricles; a few slender bands were stretched across the aperture.

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[1] As air in the heart is rarely observed, and as it is, from its very nature, a condition not long demonstrable, it may be well to mention that I took the specimens directly to Dr Macfarlane, late Professor of Medicine in Glasgow, who resides here. He was quite satisfied as to the existence of the air-bubbles, and also as to the absence of putrefactive change.

The enlargement of the heart was due to hypertrophy and dilatation conjoined. In the neck, besides the distended veins, nothing special was discovered. There were no enlarged glands. The arch of the palate was small and very low. The tongue much enlarged. The parts about the glottis and trachea normal. In the abdomen nothing worthy of note was observed. The urine found in the bladder contained no albumen.

Before considering the most remarkable post-mortem discovery,—the air in the chambers of the heart,—I shall first shortly review the signs and symptoms, and the opinions regarding them during life, in the light of the facts revealed by dissection.

I. There was extensive emphysema of both lungs. That this was present was shown during life by the shape of the chest, the mode of respiration, the dyspnœa, the resonance on percussion, and the bulging of the inferior triangles of the neck.

To the question, what was the cause of the emphysema? the post-mortem appearances do not give an absolutely decisive reply: because several pathological states were present which might have acted either singly or in combination to produce it. A few considerations may enable us to weigh their relative importance, and so bring us nearer the answer.

Pulmonary emphysema originates in various ways. It is believed to be frequently a consequence of pulmonary collapse: the healthy lung around the shrunken portion expands to fill the vacant space. This was not the origin of the emphysema in our case, for there was no trace of pulmonary collapse discovered. In those numerous instances, where the disease far exceeds mere compensation of space, distending the chest and even displacing the viscera, there are other causes at work. The most direct and potent causes are those which interfere with the air leaving the pulmonary vesicles at expiration. The interference may occur in two ways:—

1. From narrowing or obstruction in the air-passages;
2. From failure of the expelling force.

The former, if it continues long enough, gives rise to the latter.

Obstructions at any part of the air-passages, causing sustained dyspnœa, may originate emphysema. Thus, tumefaction and consequent narrowing of the bronchial tubes as in bronchitis: the pressure of tumours upon the bronchi, and obstructions in the trachea or at the glottis, come to rank as causes. The more remote the obstruction is from the air-cells, the more extensive is its influence. Thus an obstruction at the glottis tells equally upon both lungs.

It will be observed that, in all these instances, the obstruction which hinders the exit, hinders also the entrance of air into the air-vesicles; but this, although it may lessen, does not neutralize the effect of such an obstruction as a cause of emphysema. For the *same* degree of mechanical obstruction has a far greater influence in hindering *ex*piration than inspiration, inasmuch as the muscles of ordinary expiration are far less powerful than those of inspiration. Air is drawn in past the obstruction without being thoroughly expelled. Succeeding inspirations introduce fresh supplies of air, which, in course of time, gradually distend the air-cells of the entire lungs. The chest becomes fully expanded, and its walls fall but little at expiration. Functional disturbance of this kind soon gives rise to organic change. The air-cells, unable to empty themselves, remain dilated, their walls are stretched, and their elasticity becomes impaired. Whenever the condition of impaired elasticity is fairly established, the second and more powerful cause of emphysema comes into play, viz., failure in the expelling force. This latter cause is much the most serious, for although the obstruction in the air-passages, by which it may be originated, ceases or is removed, the loss of elasticity is permanent, and the disease is liable to increase. Because, as the air-vesicles cannot empty themselves, the normal interchange of the gases is impeded, and the result is dyspnœa, which excites greater inspiratory efforts, producing in turn greater dilatation of the air-cells, and still greater loss of elasticity. So matters go on from bad to worse.

Such seems to be the rationale of the manner in which mechanical obstruction may originate emphysema.

In our case there was sustained dyspnœa, produced by the obstruction which the state of the palate and uvula occasioned. That this obstruction was really the cause, or *a* cause, of the dyspnœa was proved by the interrupted sucking, the attitude of the tongue, the physical examination of the parts, and, lastly, by the temporary good results of the operation. This obstruction, then, in the manner just explained *could* have induced the emphysema.

But other morbid conditions co-existed in our case. Enlargement of the heart was present. This gives rise to emphysema by compressing the lung around, and so throwing the whole expanding power of the inspiratory muscles abnormally upon *a portion* of the lungs, thus preternaturally distending the air-cells. This is a variety of *compensatory* emphysema.

Again, a malformation of the heart existed, to which some might attribute the emphysema, although it is not so obvious how this defect would come into play. In the recorded cases of similar communication between the ventricles, no evidence of mixing of the arterial and venous blood, and no other symptom has, according to Forster, been observed.

What relation, then, did these three states bear to one another in this case? Did the morbid chain begin with the malformation, which, by inducing dilatation and hypertrophy, produced in turn emphysema? Or, did the emphysema caused by the obstruction to respiration give rise to the enlargement of the heart, the malformation having little or no influence? The latter view is undoubtedly far the most probable, especially when in addition we take into consideration the relative degree in which these conditions were present in our case. The dyspnœa was very great, the emphysema was most extensive and extreme, whereas the enlargement of the heart was only moderate. On the whole, there is very strong evidence for believing that the obstruction to respiration was the primary cause of the emphysema.

II. What was the cause of the œdema of the face and neck, and wherefore its absence in the lower half of the body? The inspection showed that this difference was *not* due to any special source of pressure or obstruction in the neck itself. To what, then, was it due? The answer is to be found in the condition of the chest cavity as to pressure, and I ask attention to this the more, because I think it furnishes the key to solve the problem of the "air in the chambers of the heart."

Before death, the walls of the chest were in the attitude of extreme inspiration, and more than this, they were bulged and distorted upwards by the violent efforts of the inspiratory muscles. The upper ribs were motionless, and the acts of respiration were imperfectly carried on by the lower ribs alone. The bulging in the inferior triangles of the neck present in our case, is mentioned by some writers as a diagnostic sign of emphysema of the upper lobes, and has been described as a "hernia of the lung." It is a protrusion through the least resisting portion of the walls of the upper part of the chest, and is an evidence of abnormal pressure within. After death, the lungs were found to be most extensively affected with emphysema. It reached its highest degree at the apices, where the lungs were of a yellowish-white colour, from the stretching of the walls of the air-cells and the consequent anæmia. Over the surface of the upper lobes marked extra-vesicular emphysema was found.

All these facts indicate that the chest cavity, especially at the upper part, was very tightly packed, so to speak, and that the relative condition of pressure was interfered with; that whereas normally the chest walls keep the lungs from collapsing, here their influence, at least in the upper part of the chest, was rather to keep them from expanding. Hence the distended veins of the neck and the œdema; the blood could not descend through the upper aperture of the chest. At the lower aperture the circumstances were different. The floor of the thorax is comparatively yielding, and from the state of the diaphragm was unusually so in our case.

To the excessive action of this muscle, probably in the first few weeks after birth, diminished power succeeded, and latterly there seemed to be complete failure in its action, for, as previously noted, the upper abdominal regions were drawn in instead of being protruded at inspiration. Again, the lateral pressure at the lower part of the chest was not so great, for the function of respiration was carried on by the motions of the lower ribs; and although that suction-force caused by inspiration, which some physiologists hold be the prime mover of the venous flow towards the heart, must have been feeble if it existed at all, still its opposite, viz., *obstruction*, was not so decidedly present as to produce œdema.

Besides the conditions of pressure at the apertures of the chest, let the *effects* of pressure within its cavity be now considered. Those structures which are least able to resist pressure suffer most. Thus, in the upper half of the chest, where the pressure was great, we would expect the large veins—the superior cava and innominata—to yield and become flattened or collapsed. Even the heart, as a hollow organ, ever changing its internal capacity and external bulk, would not be exempt from the same influence. This will become more apparent when it is recollected that the heart dilates in virtue of its own elasticity taking advantage, so to speak, of the relaxation of its muscular walls. In dilating it tends to its passive state. Of course, we refer to the period of "pause" in the heart's action, and exclude the last part of the dilatation of the ventricles, which *may* be entirely due to the blood sent into them by the auricular systole. But prior to the contraction of the auricles, the distending force, if there is any, which the blood exerts in entering the cavities of the heart, is very trifling. However this may be, certain it is, that the forces which distend the heart are feeble and are easily interfered with by pressure from without.

Of the truth of this statement, cases of pericarditis, with a large effusion and a *tense* pericardium, furnish good illustrations. The proper dilatation of the heart is prevented, little blood enters the ventricles, and so the pulse is *small*. Death is believed sometimes to be caused in this manner.

In the latter stages of our case, the intra-thoracic pressure exerted by the emphysematous lungs must have similarly interfered with the heart's action, and probably accelerated the end. Death began at the heart. Its immediate cause was probably as much deficiency of blood in the cavities of the heart as failure of its contractile power. The small amount of blood in the body, the pressure upon the afferent vessels of the heart, and the hindrance to its normal dilatation, all conspire to this view. Under such circumstances, we would expect the heart to be almost empty, and if so, then not *contracted*, but compressed and collapsed by the external pressure.

The survey of the signs and symptoms during life, and of the circumstances and conditions of death, is now completed, and the way is thus prepared for the explanation of the *air in the chambers of the heart*. From the preceding statement I shall shortly sum up the points to be kept in view. Some are observations of facts, and some are physiological and pathological inferences.

1. The extensive emphysema of the lungs.
2. The consequent abnormal intra-thoracic pressure.
3. The veins in the upper part of the thorax, the superior cava and innominata, etc., compressed and nearly empty.
4. *At the time of death*, the cavities of the heart empty of blood, and, owing to external pressure collapsed and compressed.

5. *At the inspection*, the heart found empty of blood, *but containing air-bubbles.*

It appears from this that *the air in the chambers of the heart* was a post-mortem change, but only so in a limited sense. The air was not, I believe, the product of decomposition of blood or putrefaction, but the air reached the heart during the dissection, and the phenomenon may be fittingly described as an *inspection change.*

It happened on this wise. In making the dissection rapidly, I wounded either the left jugular near the cardiac end, or the left innominate vein. Not considering the occurrence of any importance at the time, it received little attention. Neither Dr Finlay, who was present, nor I can recall distinctly whether the accident happened *before* or *after* the chest was opened. It was most likely to occur when the left clavicle was being disarticulated previous to raising the sternum; but as I first dissected back the integuments from the neck, making an incision along both clavicles, it might have occurred then. It is to be regretted that this point cannot now be determined; for although the explanation holds on either supposition, yet if it could be asserted that the vein was wounded before the chest cavity was opened, it would make a clearer case. I recollect a considerable quantity of blood escaped by the wound from the veins of the neck, which was wiped up with a sponge. This blood was not mixed with air-bubbles. The vein was wounded and the blood wiped up certainly *before* the lungs were removed, and also before the pericardium was opened; so that the heart was not then exposed to view.

The theory proposed is, that on opening the chest cavity, and so removing the pressure, and at the same time making an accidental opening into a vein, the heart, from the elasticity of its walls, would *naturally* tend to recoil and re-expand, and the superior cava and innominate below the wound in the vein being nearly empty, it (the heart) would experience little resistance in drawing the air through the wound into its right chambers, and through the aperture in the septum into the left also. The small quantity of fluid blood in the veins on the cardiac side of the wound would be simultaneously sucked in by the distending heart, and give rise to air-bubbles.

Such is the theory of the source of the air. Could its discovery have been predicted, means might have been devised to have determined its origin or source with greater certainty; for example, the air or gas might have been collected under water, and its nature examined; or, supposing the above theory to be correct, the heart might even have been observed to expand. However, as matters stand, the case must be judged of by the facts actually observed, and the circumstantial evidence adduced. To give the above explanation full justice, let the reader, in judging of its soundness, take for granted that the wounding of the vein preceded the opening of the chest, seeing that as far as is known this may have been the case. And now let us suppose that the opening of the chest preceded the opening of the vein and inquire how the explanation would be affected.

If, when the chest cavity was opened, the heart expanded before the vein was wounded, then its cavities would be filled (to the extent that they expanded) with blood. But could the heart expand under the circumstances before the vein was opened? This would depend upon the dilating power of the heart and the amount of resistance to its dilatation. Admitting the dilating power to be the same in both cases, the resistance to be overcome was much greater in the latter. The afferent vessels of the heart being all compressed and containing little blood, would not, therefore, part with it except to a strong suction force. From the neck, where there was a plethora in the veins, the blood could not descend as long as the emphysematous upper lobes filled the superior aperture of the thorax. In short, it appears more than probable that the dilating force (solely dependent on the heart's elasticity) could not have overcome the resistance offered, and therefore the heart could not have expanded. When, however, an opening was made into the innominate or juglar vein near its cardiac end, the intervening passage being nearly empty, almost no resistance to the dilating force would remain, and the distending heart would fill its cavities with air.

The writer does not, by any means, consider that he has *demonstrated* the truth of this explanation of a rare phenomenon. He regrets that there are many links awanting in the chain of logical proof. At the same time, he believes that the view advanced is not only, in conformity with established laws of physiology and physics, but is also strongly supported by the facts observed and by the conditions present.

On relating the case to several medical friends and volunteering this explanation of the air in the heart, the writer met with more than one dissenter from his theory. The unbiassed reader may have his doubts and objections also. It would perhaps tend to remove these objections and would at least further elucidate an interesting case, were the subject viewed from a different standpoint, by considering the following questions:—

1*st*, What other explanations of the phenomenon can be given? and, 2*d*, Is there any explanations more probable or plausible than that advanced?

The whole subject of air in the heart and bloodvessels, is one which occupies a very obscure corner in systems of pathology, and is but little referred to in the standard English works. It might not on this account be less instructive to review what has been observed and recorded in respect to such cases.

In considering the questions what other explanations of air in the heart are possible, and is there any explanation more probable in the circumstances than that advanced, I propose, in the following classification, to include the various sources or modes of origin of air.

I. Air entering the heart from without,—(*a.*) during life; (*b.*) after death.

II. Air or gas developed from the blood and disengaged *within* the vascular system,—(*a.*) during life; (*b.*) after death.

Under these four classes, I shall, as concisely as I can, arrange illustrative cases, adding a few observations and facts, and gathering up, as opportunity offers, any light that may thus be thrown upon the case which forms the subject of this paper.

I.—(*a.*) *Air entering the heart from* without *during life.*—The best known illustrations of this class are cases of air entering by wounded veins during operations, and so reaching the heart. If the quantity is large, death is instantaneous.

It was once my lot to be present at a case of this kind. The operation was transfusion of blood. The patient was exceedingly weak from repeated secondary hæmorrhages after an amputation, and transfusion of blood was deemed his only chance of recovery. During the operation, the patient, who was perfectly conscious, gave a sudden gasp and *instantly* died. There was reason to conclude that, from a defect in the syringe, some air was injected, and, I believe, no doubt existed in the minds of those present as to the cause of death. The conclusive proof which a *post-mortem* might have supplied was unfortunately not obtained.

Similar accidents are believed to occur in connexion with parturition. Air entering by the open mouths of the uterine veins after the separation of the placenta is sometimes carried into the general circulation, and may even produce a fatal result. Sir James Simpson of Edinburgh[1] has recorded a fatal case where a *post-mortem* was obtained. It was performed "a short time after death, because it was considered desirable not to incur the fallacy of air being present from decomposition." "The abdomen was opened under water,—the lower vena cava, but specially the uterine and hypogastric veins, were distended with frothy blood and the air bubbled up through the water when any of these tubes were opened."

As to the rationale of the introduction of air in these cases, Amussat[2] finds a sufficient explanation in the movements of respiration. But, as pointed out by Sir James Simpson, a far more efficient mechanism exists by which air can be forced into the open veins and pushed onwards. When, in consequence of relaxation of its walls after delivery, the cavity of the uterus re-expands, air streams in, and penetrates into the venous sinuses laid open by the separation of the placenta. If, under the circumstances, any narrowing or obstruction, as by a clot, exist at the os uteri, then the returning uterine contractions may propel the air through the uterine veins into the general circulation. Another supposable mode of air reaching the heart was suggested in my hearing by Professor Oppolzer of Vienna, at a post-mortem, where we found the blood in the heart foamy. The details are taken from my case book:— "The patient died suddenly, on the 21st day, of enteric fever (typhus abdominalis, as it is called in Vienna). At the examination of the body, the follicles and solitary glands of the intestine were found much swollen. An ulcer was found near the ilio-cœcal valve, penetrating the mucous and muscular coats, but not the peritoneum. Air-bubbles were seen in the submucous and subperitoneal areolar tissue. Air was also seen in the vessels of the part and in the liver and heart—(unfortunately it is not stated on which side of the heart, and I cannot recollect). The blood in the heart and where air was found was very dark in colour; not reddened as in ordinary cases of air in the veins. There were no signs of decomposition in any part of the body. Oppolzer threw out the theory that the carbonized gases which exist at this part of the intestine, gaining entrance into the opened veins through the ulcer, might have reached the heart, occasioning the frothiness and dark colour of the contained blood, and also causing the sudden death. Some may think it more probable that this case would fall to be grouped in a different class, but I mention the above as a theory which has claims to ingenuity, and, coming from one so distinguished, as worthy of attention.

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[1] Edinburgh Monthly Journal, April 1849.

[2] Amussat, Recherches sur l'Introduction accidentelle de l'Air dans les Veines. Paris, 1839.

Still another mode of explaining the access of air to the heart during life, is one which I was at first inclined to adopt in my case. The extensive *vesicular*, especially when associated with *extra-vesicular* emphysema, suggested the supposition that one or more air-vesicles had burst into a pulmonary vein, through which the air was conveyed to the heart. Strongly against this view was the reliable statement of the mother as to the manner of death —it was not sudden. Moreover, the following test which I applied, although perhaps not conclusive, was decidedly adverse to this theory of origin. I inflated each lung separately under water, through its bronchus, and after careful searching could find no escape of air by any of the veins. An actual case, however, very analogous to this suppositious one, is recorded by a German writer (Dr G. Cless[1]). The circumstances were as follows:—A patient with well-marked phthisis, but in tolerable health, was suddenly seized with a fit of urgent dyspnœa. After a few minutes, a second returned and produced loss of consciousness; a third terminated in death. At the inspection, pneumothorax was found on the left side, resulting from the bursting of a tubercular cavity, and the *left* cavities of the heart were discovered distended with air. There was no sign of decomposition. A pulmonary vein was conjectured to have been ruptured by the bursting of the vomica. Through the rent thus created the heart at its diastole was supposed to have drawn air into its left chambers.

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[1] Luft im Blute, von Dr G. Cless. Stuttgart, 1854.

It will be observed that these illustrative cases of air entering the heart during life naturally fall into two divisions, according as the air reached the heart through the systemic or through the pulmonary veins. In the former case the air is found in the right chambers only, in the latter in the left. The observation, therefore, which side of the heart contains air, itself furnishes a guide to its origin and source. In my case, curiously enough, the malformation of the heart deprived us of this guide to determine the source of the air, for, as it will be remembered, a large foramen in the septum connected the two ventricles, and air was discovered on both sides of the heart. In conclusion, under this division, there are two prominent reasons which exclude the case we are considering from this first class:—1*st*, There are no proofs whatever of any communication having existed during life between the external air and the vascular system; and, 2*d*, The mode of death,—it took place by way of asthenia.

I.—(*b.*) *Air entering the heart from without after death.*—In this division the case I have recorded in the preceding pages finds, I believe, its appropriate place. It is unnecessary to recapitulate the facts or the arguments. There was an *aperture* to admit the air, and there was a *force* to convey it; and with this explanation all the circumstances of the case agree. No case of this kind is on record as far as I am aware; but if this explanation be admitted to be probably correct, it may be fairly inferred that the same thing has occurred before and may occur again. A similar post-mortem appearance occasionally presents itself, which may be mentioned here. Strings of air-bubbles are sometimes seen in the superficial bloodvessels of the brain. This appearance was noted by Morgagni, and was considered by him, and also by Bichat, Albrecht, and others, as a cause of death. More recent observers and pathologists have rejected this view, and hold that in most of these cases the origin of the air is to be traced to the accidental tearing of certain vessels by the opening of the cranium. Into the torn vessels the air gains admittance. No doubt there are other cases where air having a different origin may be found in the cerebral vessels as in other parts of the vascular system (*i.e.*, from general decomposition). Such cases shall be referred to in the sequel.

II.—*Air or gas developed from the blood and disengaged within the vascular system; (a.) during life.*—That gas is sometimes really disengaged within the vascular system during life is supported by cases and arguments of various kinds. The most direct proof is furnished by certain cases related by Cless (in his pamphlet on air in the blood, already quoted), in which air-bubbles issued along with the blood from an opened vein. If these cases could be relied on as authentic, the question would be at once set at rest. Several such cases are mentioned by Nysten.[1] He relates one observed and recorded at

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[1] Recherches de Physiologie et de Chimie pathologiques. Paris, 1811.—(Nysten.)

Rouen, by Joubert, in the seventeenth century. And "several times" during venesection (in cases of asthma principally), air-bubbles were seen by Professor Peyrilhe of Paris, to flow out with the blood. The Professor testifies that in those cases where he observed air-bubbles present in the blood, the relief afforded by the venesection was very much greater. The most recent and trustworthy case was detailed by Durand Fardel, at a lecture delivered by him before the Paris Academy of Medicine, in 1851.[1] It occurred at Vichy. The patient, a corpulent lady aged 56, except that she suffered a little from breathlessness, enjoyed excellent health. On stepping out of a bath one morning, she suddenly became very breathless and anxious, and sank down on a chair. Durand Fardel was at her side in less than five minutes. He found her pulseless and seemingly dead. He immediately opened the median vein; *thin violet-coloured foamy* blood flowed out. The air-bubbles were of different sizes, and by distending the vein seemed to send the blood out in a stronger stream. The body was opened twenty-two hours after death. Besides some enlargement of the heart, there was no particular abnormality discovered. The blood in the right side of the heart and in almost all the veins was found foamy; the bubbles of air varied in size from a pin's head to as large as a pea. The left side of the heart was found absolutely empty. The whole case seems to have been observed with great care, and a most minute account is given. I am not aware that there have been any more recent observations of this phenomenon—of air-bubbles issuing into the blood from a vein,—but there are several other cases, which, when compared in respect to their histories and post-mortem appearances, give strong support to the belief that gas may be disengaged within the vascular system during life. These are cases of sudden and unexpected death, preceded and accompanied by certain similar symptoms, with no explanatory pathological change ascertained by dissection, except the discovery of air in the heart. In many such cases, there are grounds for believing that the air was developed during life, and that its presence was the cause of death. From the great change in modern practice in respect to venesection, it is not remarkable that the positive proof which this alone could supply should be wanting in these cases.

Dr Cless gives a list of thirteen cases from various sources which all agree in regard to the manner of death, in regard to the presence of air in the heart, and (except in two of the cases) in regard to the absence of any other discoverable cause of death. Death, sudden in all, was preceded by urgent dyspnœa, by cries of terror and anxiety, and frequently by spasms. Space does not admit of my detailing these cases. Let me refer the reader to Cless's pamphlet, where he will find all the circumstances stated, and the references given. Further, it is believed that disengagement of gas may take place, give rise to symptoms of impeded respiration or disordered circulation, and again subside without producing a fatal result. Nysten relates that De Jaer[1] and others considered some cases of convulsive asthma to be thus explained. In favour of the possibility of this occurrence, it may be added that, granting gas may be spontaneously developed from the blood, the result is not necessarily fatal; for it seems from the experiments of Amussat upon animals, that whether death follows or not depends upon the *quantity* of air or gas present. He found that if only a small quantity of air was injected after symptoms of disturbance, the animal recovered. The mode in which air or gas impedes or arrests the circulation, is generally believed to be purely mechanical. This view is held by Majendie, Nysten, and other writers.

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[1] Gazette Méd. de Paris, 1851, No. 50.

The cases illustrative of this mode of origin of air are all drawn from foreign sources. I find none recorded in our best English authorities; and even Rokitansky seems only to recognise air in the heart and veins as a product of decomposition after death. Wunderlich[2] pronounces all such cases to be of doubtful veracity. Without venturing any opinion as to the authenticity of these cases, I shall, in concluding this third division, make a few remarks bearing upon the *probability* of gas being liberated from the blood within the vascular system.

In the first place, there can be no doubt that gas is secreted from the blood. In health, this takes place in the stomach and bowels. In disease, in tympanitis for example, the gas which distends the intestine was held by John Hunter and Cullen to be mainly an exhalation from the blood. This view was corroborated by the experiments of Majendie, and its correctness is now generally admitted. As air can be rapidly absorbed into the blood, so also can it be secreted or exhaled from the blood. In no other way can the rapid production of tympanitis or of the hysterical tumours of the intestine be accounted for. And have we not a still more notable example of gas rapidly absorbed and secreted by the blood in the function of respiration? The changes which are produced by this important function do not occur *solely* within the air-cells, by the mere permeation of their membranous walls by the oxygen of the atmosphere and the local formation of carbonic acid; but it is now clearly proved that these gases exist in the blood, "in part dissolved, and, probably also, in part combined with one or other of its ingredients" (Kirkes' Physiology), especially with the red corpuscles in the opinion of some physiologists. Hence these bodies have been significantly called "oxygen carriers." Of the fact, that the circulating blood by means of some of its ingredients or properties does indeed convey air to the tissues, a good example is afforded by the swimming bladder of fishes, which can obtain its air from the blood alone.

Next, as to the mode in which the blood yields up the air it carries to the tissues, little can be said; but from the simple structure of the walls of the capillaries, it is doubtful whether the process is more than a physical one, and deserves a higher name than imbibition and exhalation. If this is so, it seems not very improbable that, in certain states of the blood, or under certain circumstances, the dissolved or combined gases may be set free *within*, instead of *without* the thin membranous sheath of the capilliaries, and circulate as air-bubbles with the blood. In answer to the question, What circumstances or states of the blood would favour the disengagement of gas within the bloodvessels, there are no facts to bring forward, but the following theoretical suggestions may be made :—

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[1] Nysten; *op. cit.*

[2] Handbuch der Pathologie und Therapie. Stuttgart, 1853.

1*st*, It is observed that the blood can, under the *most favourable* circumstances, only dissolve or combine with a certain *limited* quantity of gas. There must be a *point of saturation*. Under a change of circumstances the saturation point would fall and less gas could be kept in solution or combination.

2*d*, As far as I find, the disengagement of gas in the recorded cases has taken place in the venous system, and this is just what might be inferred, viewing the matter in a theoretical light; for the venous system is far more subject to derangement than the arterial. Any hindrance to respiration, from disease or otherwise, immediately produces retardation of the venous current, and prevents the escape of carbonic acid from the blood. If the obstruction last, and if carbonic acid still continues to be formed and to be dissolved in the blood, the point of saturation would soon be reached. Further, if in this state of matters any change in the chemical or vital constitution of the blood, interfering with its capacity of dissolving or combining with gas, should take place, then disengagement of gas within the vascular system would be the natural result. On the whole, then, in the absence of further proof *for* or *against* the development of gas within the vascular system, I think it will be admitted that theoretical considerations do not greatly tend to throw doubt upon the alleged cases of its occurrence.

Finally, granting that this phenomenon — the generation of gas — does sometimes happen, and that air having this origin may be discovered in the cavities of the heart at a post-mortem, the last question is, Can this be accepted as the explanation of the presence of air in the particular case I have related? I think not; for the following reasons :—In all the alleged cases which ended fatally death was sudden; the preceding symptoms were also sudden in their accession; and there was no other satisfactory cause of death discoverable. *In none of these respects* does the case under discussion agree. The child was manifestly sinking for several days, and for a few hours before death the weakness was extreme. The post-mortem examination satisfactorily explained all the symptoms observed during life, as well as the fatal termination.

II.—(*b.*) *Air or gas disengaged within the vascular system after death.*—When, together with decided evidence of putrefactive change in the body, gas is discovered in the heart and bloodvessels after death, this phenomenon is justly considered as originating in decomposition, and forms, in fact, one of its signs. Cases of this kind are numerous, and do not claim our attention here; but, further, there are cases, probably not rare, where gas is found in the vascular system, and where the usual signs of decomposition have not appeared.

Dr Schott, the assistant of Rokitansky, not unfrequently notices this condition at the inspections in the Vienna Hospital. He observes the gas most commonly in the jugular veins. Foräter says, the collection of gas has generally been formed on the right side of the heart. In the same cases the blood was frothy in the jugulars and other large veins. The nature of the gas is quite unknown. It is believed to be liberated from the blood by some phase of decomposition. The circumstances of the cases in which this phenomenon has been observed are very various. On the whole, however, there is a preponderance of typhus cases, as if a septic condition of the blood was favourable to its occurrence. Under this division of the subject the question again presents itself, Might not the case I have related be classed in this category? It must be admitted that much might be said in favour of this view, and those who consider the explanation I have ventured to propose unsatisfactory will probably rank the case in this class.

The principal grounds in my opinion for excluding it are,—

1st, The entire absence of the least trace of putrefaction in any part of the body,—the weather at the time was hard frost, and this inspection took place thirty-two hours after death.

2d, The child did not die from any septic disease, such as typhus fever.

3d, The blood which escaped in large quantity from the veins of the neck was not frothy.

4th, The conditions upon which I have based the explanation of air gaining access to the heart *during* the inspection of the body were certainly present. And this being so, it seems to me improbable that these conditions could have existed simultaneously without producing this result.

The various sources or modes of origin of air in the heart have now been passed in review. What influence the survey has had upon the particular case before us, or upon the theory already advanced in explanation, I have tried to point out in passing; and I now leave it for the impartial reader to decide whether he considers that the theory proposed is corroborated or rendered less probable. I trust, at least, this general view of the subject of air in the vascular system may not have proved uninteresting or wholly uninstructive.

ARTICLE IV. — *On Diphtheria.* By WILLIAM KETCHEN, M.D., L.R.C.S., Medical Officer, Forfar Infirmary; late Resident Physician, Edinburgh Royal Infirmary.

AFTER a long absence from this country diphtheria within the last few years has again taken rank as one of our endemic diseases. Its severity varies so much that one can scarcely recognise in the slight sore throat, accompanied only by a general sense of malaise, and not sufficient in many cases to confine the patient to the house, the formidable disease which runs on to its fatal issue, baffling all the skill of the physician. In many cases to which I have been called the disease has been so slight that, although no doubt existed as to its nature, there has been a delicacy in letting the patient or friends know what it was, for fear of being considered an alarmist.

The following case is one which, though there were no severe symptoms at first, manifested most of the peculiarities of the disease, except croupal symptoms; and, latterly, such complete paralysis came on that the patient was unable even to move herself in bed:—

Eliza T., æt. 21, a nurserymaid in Forfar.

1st February 1865 (Wednesday).—Saw this patient on Sunday last, on account of a sore throat, from which she had been suffering from the Friday previous. She has been subject to sore throat before, and I myself attended her for an attack not long ago. On examining the throat I found a distinct patch of false membrane on each tonsil. There was little or no constitutional disturbance, and she was able to go about the house. I applied a solution of caustic, 60 grs. to an ounce, to the throat, and ordered her a Dover's powder, to be taken at bedtime. She passed rather a restless night, and next morning when I saw her the throat was almost clear. The day following (Tuesday) the membrane had returned,—a shred of it was hanging from the tonsil, and the patient had spit up bits of it with some blood. To-day (Wednesday) the membrane is pretty abundant, and is now blackened, and has a sloughy appearance. The right tonsil and uvula are considerably swollen, and the passage from the pharynx to the nostrils is quite blocked up. There is also considerable swelling in the submaxillary and parotid regions externally. The pulse is soft, and about 100. The patient sits up in bed. She is taking tinct. of the muriate of iron, 20 drops three or four times a-day, with wine and beef-tea. Poultices are being applied externally. The throat is being painted by means of a camel's-hair brush with solution of nitrate of silver, 60 grs. to an ounce, and she is using Condy's fluid for washing out the mouth. The urine deposits lithates, and is free from albumen.

2d (Sixth day of the disease).—The appearance of the throat is much the same as yesterday. There is no pain in swallowing, nor difficulty in getting over food. The pulse is 100, rather small and soft. Some bits of membrane came away with the brush, and she has coughed up other bits of considerable size. She complains of a bad taste in the mouth. The voice is rather husky, but there are no croupal symptoms. (Patient at this time was removed to the Infirmary.)

9th (Thirteenth day).—The patient has been going on favourably since last report. The throat is clearing, but there is still a quantity of false membrane on the tonsils and uvula. The urine deposits lithates. It is highly albuminous, and contains tube-casts and crystals of uric acid.

16th (Twentieth day).—Albumen has continued in the urine in undiminished quantity since last note. Paralysis of the uvula came on two or three days ago, allowing fluids to regurgitate through the nose. The pulse is good, and the throat almost free of membrane.

25th (Twenty-ninth day).—Paralysis of uvula is still present. The urine has been examined daily since last note, and up to the 21st it contained albumen in great abundance. On that day it was much less, and since it has been present only in very small quantity. She complains of dimness of vision. The pupils contract slowly on applying light.

5th March (Thirty-seventh day).—The urine has continued since last note persistently albuminous; but the quantity of albumen has varied, being almost imperceptible on some days, while on others it has been in larger quantity. To-day she complains of loss of feeling in the hands, and there appears to be also some loss of power, as her grasp is feeble. She has been out of doors once or twice, but is not able to go far without support. Her appetite is improving under quinine. (She left the Infirmary at this date, and went to her home in the country.)

31st.—Her sister has brought me a specimen of the urine, which is quite free from albumen. She states that the sight is much improved, but the legs are so very weak that she cannot walk across the floor without assistance.

16th May.—To-day I saw the patient at her own home. She is looking rather pale and thin, though she says she is gathering strength. She takes her food tolerably. The grasp of both hands is very feeble, and she cannot yet stand without support. The eyesight is quite good, and the voice is natural. She is now able to turn herself in bed, and to draw up her legs, and with the assistance of two persons she can walk from the bed to the fireplace. Some time ago she complained of cold in the legs and arms. There was also prickling in the hands and feet, and this is still occasionally present in the toes, especially in the great toe. (The patient after this recovered slowly but gradually, and now enjoys good health.)

The next case shows the disease in one of its mild forms.

Agnes S., æt. 12, residing in Forfar.

October 30, 1865 (Monday).—Is suffering from sore throat and feverishness, which she felt for the first time on getting up on Saturday morning last. Her mother examined her throat in the course of the day, and, thinking it looked suspicious, sent for me in the afternoon. On visiting her the same evening, I found on the left tonsil a small patch of false membrane. Both tonsils were considerably swollen, but the left particularly so. I ordered her fifteen drops of tinct. ferri three times a-day, and the throat to be painted two or three times a-day with mixture of equal quantities of glycerine and iron. To-day the pulse is upwards of 100. Her father states that there was considerable delirium during the night. The right tonsil has now become affected, and in both the membrane has become blackened. She spat up bits of membrane several times to-day. On the Wednesday previous to her seizure, she had been in the country, and staid till Thursday morning with a family where there was a patient recovering from diphtheria.

October 30 (*nocte*).—There has been a good deal of delirium, and she has been complaining of a violent pain in the forehead and arm. Face very much flushed; pulse upwards of 120; tongue moist, and covered with a white fur. The urine has been examined daily, but there is no albumen.

November 1.—The patient is much improved to-day. The pulse is between 80 and 90. The febrile appearance is nearly gone. The throat is beginning to clean. She had a quiet night. No albuminuria.

The patient rapidly improved after this.

In connexion with the question of infection in diphtheria, I think there is no doubt that, although it can be propagated from one person to another, a large number of cases arise *de novo*. In the case of Eliza T., when she was seized with the disease, there was not another case in the town or neighbourhood; and she ascribes the attack to having caught cold while walking by the loch's side a night or two before she was taken ill. When I was called to her, and recognised the nature of the disease, I took measures to have her removed to the Infirmary as soon as possible; and until her removal there, I had her separated from the rest of the family. Notwithstanding this, two or three days after her removal, first one of the children took it, then another, until four were attacked, and two of them died of croupal symptoms shortly after. In the case of Agnes S., if the disease was caught from the family with whom she had been staying two days before, the period of incubation would be about forty-eight hours. There are several other cases which I know of persons who have been in contact with diphtheria patients having taken the disease. At the same time I do not think that it is contagious or infectious in a very high degree. I have never taken any pains to obviate its contagious effects on myself while attending patients with the disease. Many times, in very bad cases, while applying local applications to the throat, the patients have coughed into my face, and matters from the throat have gone into my eyes, without my ever having felt any inconvenience afterwards.

In a considerable number of cases of diphtheria, no infection can be made out. A solitary case often occurs without there being any others from which the disease can be traced.

The disease, even in severe cases, comes on frequently with very little constitutional disturbance, except a slight rise of the pulse and loss of appetite and strength. There is generally very little pain in swallowing food, although there is often considerable smarting when the tinct. ferri is taken. The passage from the mouth to the pharynx appears sometimes to be almost blocked up, yet there is no great complaint of obstruction to the passage of the food, possibly from its liquid nature. The passage from the mouth to the nose is generally closed by the swelling, and the patient breathes through the mouth. The voice becomes indistinct, and, afterwards, when the swelling disappears from the throat, and paralysis of the soft palate takes place, it assumes a nasal twang. At this latter stage also the food begins to regurgitate through the nose.

In the case of Agnes S., there was considerable delirium, and more than usual febrile disturbance for the amount of local symptoms. The false membrane in her case was observed by her mother a few hours after the throat first became sore. When the membrane has been present for two or three days, it becomes blackened from exposure to the air, and hangs in shreds from the tonsils, assuming a sloughy appearance, and giving the patient's breath a very offensive odour. In one of my cases, there was a patch of membrane on the lower lip, as well as on the tonsils; and in the same case, after the membrane had entirely disappeared for two or three days, and the patient was otherwise better, it returned, though not to any great extent. Pieces of membrane that have been hanging loosely from the tonsils I have frequently removed with a pair of forceps, where this could be done, without any injury to the parts. These have sometimes been large and of considerable thickness. They could be cut like a piece of leather. Under the microscope, the membrane appeared to consist principally of epithelial cells.

The albuminuria, which is a marked character of diphtheria, I have only seen in the more severe cases of the disease. The albumen has generally been present in very large quantity. The urine has been of low specific gravity and contained blood-corpuscles and tube-casts covered with renal epithelium. In one case, it came on in the third day of the disease, and lasted till death; in the case of Eliza T., it came on between the sixth and thirteenth day, and lasted till the seventh or eighth week; in another case, it came on somewhere before the eighth day, and lasted till the twentieth day.

With regard to the paralysis, the case of Eliza T. is the only instance where I have seen it become general. It first affected the soft palate, then the eyes, arms, and legs, getting worse as the condition of the urine improved, affecting not merely motion but sensibility, the patient ultimately becoming so helpless as to be unable to turn herself in bed, or draw up her legs. The affection appears to be in the peripheral nerves, affecting the nerves of special sense, common sensibility, and motion. There was no evidence of any impairment of the mental faculties, nor of any intra-cranial affection. It lasted about five months from the time when she was first taken ill with sore throat.

Treatment.—The treatment of diphtheria has given rise to much discussion. I think the use of strong local applications to the throat is bad. I have followed the plan recommended by Dr Greenhow, of applying, by means of a camel's-hair brush, a mixture of equal parts of tinct. ferri and glycerine to the parts affected. I have also tried a solution of nitrate of silver in the same way, of the strength of 40 or 60 gr. to an ounce; but I prefer the iron and glycerine. Condy's fluid, used as a wash for the mouth, I have found of great service; gargles, I hold to be useless. In cases where there is swelling in the submaxillary and parotid regions, poultices are of great benefit. When shreds of membrane have been hanging from the tonsils loosely attached, and where they could be removed without using much violence, I have not scrupled to do so by means of forceps. As far as constitutional treatment is concerned, I believe there is no specific at present known for the disease. Tincture of muriate of iron given in pretty large and frequent doses is what I have seen productive of most good. For diet, I have given milk, beef-tea, etc., from the outset, and wine or brandy according to the severity of the symptoms, the stage of the disease, and the state of the patient. The paralysis I have treated by quinine and iron, malt liquors, and nourishing food.

ARTICLE V.—*Case of Cancer of the Lumbar Glands simulating Abdominal Aneurism.* By D. RUTHERFORD HALDANE, M.D., F.R.C.P.Ed., Physician to the Royal Infirmary of Edinburgh.

THE diagnosis of abdominal aneurism is nearly always difficult, sometimes it is impossible. In its early stage it is most likely to be mistaken for functional aortic pulsation; for rheumatism or lumbago; or for lumbar and psoas abscess; when a pulsating tumour is present, the chief difficulty is to distinguish between an aneurism and a cancerous growth. The following case is a good illustration of the extreme difficulty of forming a correct diagnosis, which sometimes exists in the last-mentioned case.

Peter Spalding, twenty-six years of age, an agricultural labourer, was admitted under my care into the Royal Infirmary of Edinburgh, on the 5th April last, on the recommendation of Dr Greig, South Queensferry, complaining of a pulsating swelling in the upper part of the abdomen. Ten months before admission, the patent was a strong active man in vigorous health; the only complaint he had ever had was a tendency to headache in boyhood, but this had disappeared as he grew up. Both his parents, as well as all his brothers and sisters, were alive and in good health. About ten months ago, the patient had very troublesome diarrhœa, which lasted four months. It was accompanied by headache, weakness of the back, and great thirst. The stools were passed with great pain and straining, and were thin, scanty, slimy, and bloody. Medicines gave little relief, but the patient thought he was better when he got more nourishing food than usual. At the end of four months, the diarrhœa left him; but his appetite continued very poor, and for the first time he became conscious of a beating in the pit of the stomach, which could be felt by the hand in the same situation as that in which it now exists. At that time no tumour could be felt, and the pulsation was always most distinct after meals. In the morning he used to be troubled with retching, and attempts to vomit, which disappeared after eating, but this symptom soon disappeared, and has not recurred. About three months ago, patient became conscious that there was a lump in the situation where the beating was felt; but patient does not recollect when he first discovered its existence, or whether he did so suddenly. He says he thinks the lump was rather smaller than it is now; but that he could discover it just as easily at that time as at present.

On admission, the patient was a tall, well-made man, originally strong, but now a little emaciated, weak, and somewhat anæmic. His face was pale, but presented nothing of a cachectic appearance; his pulse was natural; his skin cool. He complained of great weakness, and of a constant gnawing pain in the back, on a level with the tumour. He stated that he frequently suffered from shooting and twisting pains in the abdomen, accompanied by an extreme feeling of depression. The appetite was poor, but the feeling of sickness was much less than formerly, and he never vomited.

On examination there was no prominence of any part of the abdomen, but pulsation was visible in the epigastrium. There was no enlargement of the abdominal veins, no ascites, and no œdema of the lower extremities. A pulsating tumour was distinctly felt in the middle line, the upper border of which was an inch and a quarter below the ensiform cartilage. Pulsation was very distinct, systolic, and of an expansile character. Manipulation caused pain and a feeling of depression, but, so far as could be made out, the tumour was of the size of a small orange, and extended more to the left than to the right of the middle line. The tumour had a moderately firm, but by no means hard feeling; it was quite fixed; change of position made no difference in the character of the pulsation. Percussion over the most prominent part of the tumour elicited a shallow tympanitic sound, but on making firm pressure, so as to depress the abdominal wall, percussion became dull. No distinct bruit was audible over the tumour, but it was almost impossible to be satisfied as to this point as slight borborygmi were nearly constant and obscured the circulatory sounds. I never myself heard a distinct murmur, though my house-physician, Dr Rhind, stated that he had occasionally heard a blowing sound. Neither auscultation nor percussion posteriorly gave any satisfactory results. The stomach, as defined by percussion, was not distended. Careful examination of the thorax and abdomen elicited no other evidence of disease. There was no enlargement of any of the external lymphatic glands. The urine was natural. He was ordered to keep perfectly quiet, to have a light nourishing diet, and to take opiates to relieve the pain.

For the next three weeks there appeared to be a certain degree of improvement, the pain in the abdomen diminished somewhat, and the appetite slightly improved. On the morning of the 29th April, he brought up, without vomiting and without effort, two or three ounces of bright red blood. After this, he stated that his symptoms were considerably relieved; and he thought that the tumour became somewhat smaller, but examination did not distinctly confirm this. The improvement was, however, very temporary; his appetite fell off; the pain became more severe, and he could obtain no sleep without opiates. On the 10th of May, and again on the 19th, the patient vomited without effort red blood in rather larger quantity than on the first occasion. There had never been any vomiting of food.

29th May.—Patient suffered much during the night from extreme abdominal cramps, accompanied with a feeling of intense sinking and depression.

31st May.—Complains of total want of appetite. Can only sleep after the administration of an opiate.

He died suddenly on the morning of the 2d June. He had not taken his opiate the previous night, as he fancied he could sleep without it. He dozed during the early part of the night; about three o'clock in the morning he had a slight attack of retching, but brought nothing up. He again laid down, but almost directly afterwards vomited between thirty and forty ounces of arterial blood, and immediately expired.

As his friends were anxious to remove the body at once, and were at the same time desirous that it should be examined, the inspection was made about nine hours after death.

Post-mortem Examination.—The surface of the body was pale, and the mucous membrane of the lips and gums blanched. On opening the body the rounded apex of a tumour, rather less in circumference than a florin, was seen in the epigastrium, in the situation where the tumour had been felt during life. The upper half of the circumference of the tumour was bounded by the lower margin of the liver, which was slightly doubled in upon itself; the lower half was surrounded by a portion of the anterior wall of the stomach. On gently separating the parts, the apex of the tumour was found to be the upper portion of a mass of enlarged, cancerous, lumbar glands. The lesser curvature of the stomach at its cardiac end was felt to be thickened, and the neighbouring glands were enlarged.

On proceeding to examine the chest, the lungs were found to be non-adherent, and quite healthy; but while removing the left lung a faint but distinct gangrenous odour was perceptible. It was now found that several of the glands in the posterior mediastinum were enlarged and cancerous; several of them, agglomerated together, lay between the œsophagus and aorta, and formed a mass about the size of a hen's egg. The œsophagus, stomach, thoracic, and a portion of the abdominal aorta, together with the neighbouring glands, were removed *en masse*. On laying open the stomach, it was found to contain between two and three pounds of loosely coagulated blood. The mucous membrane around the cardiac orifice was destroyed, and the sub-mucous tissue converted into soft almost fungating cancer, was disclosed. The orifice itself, owing to the softness of the new growth and the destruction of tissue, was not constricted. The remainder of the stomach was healthy. The œsophagus was laid open, and it was found that the mucous membrane of the lower part of the tube, for the extent of about three inches, was destroyed. Indeed, in a considerable portion of this space, the wall of the œsophagus on its posterior and left aspects was completely gone, and the wall of the canal in this situation was formed by enlarged and cancerous mediastinal glands. They were, however, so closely applied to the œsophagus, that nothing had escaped from it into the mediastinum. Commencing exactly at the upper border of the part where the œsophageal wall was gone, was an opening, about an inch in length, extending backwards, and filled with a clot. When the finger was passed into this opening, it got into a cavity, formed by the breaking down of a cancerous gland (one of those forming the mass previously described as of the size of a hen's egg, lying between the œsophagus and aorta), the contents of which had a somewhat gangrenous odour.

The aorta was now laid open, and was found perfectly healthy, except at one part. This part was on a level with the upper part of the opening described in the œsophagus, situated three inches above the cardiac orifice of the stomach. Here, in a space a quarter of an inch in length, the lining membrane of the vessel, of a brownish-red colour, bulged inwards in a convex form. Both at the upper and lower borders of this portion of lining membrane were small openings (the largest about the size of a crow-quill), through which a communication was established with the canal of the aorta and the cavity in the cancerous gland already described. There was thus an indirect communication between the aorta and œsophagus.

The lumbar glands, from the diaphragm downwards, were enlarged and cancerous. Except at the upper part, they lay over the spinal column in the form of flattened cakes, and constituted no prominent tumour. They were of a greyish-white colour, moderately firm, but slightly elastic to the touch, and were converted into masses of encephaloid cancer. The glands in connexion with the lesser curvature of the stomach were, as already stated, enlarged (some to the size of pigeons' eggs), and cancerous. The pancreas was in great part surrounded by cancerous glands, but was not itself diseased. All the other organs were natural.

The above case is one of great interest, both in itself, and from the great closeness with which cancerous lumbar glands simulated aortic aneurism. When the patient first came under observation, I was in great doubt as to whether he was suffering from abdominal aneurism or from cancerous disease of the abdomen. The first impression, suggested by his sex, age, and the nature of his sufferings, was certainly in favour of aneurism. Dr Walshe's remark on this subject should always be kept in mind. "Where-ever," he says, "obstinate abdominal neuralgic pains exist, especially in a male, and where the ordinary signs of visceral disease cannot be established, aneurism should be held in view as most probably present, even though there be no single physical sign to warrant such an opinion."[1]

On careful examination, however, certain facts were established, some of which were in favour of the diagnosis of aneurism, others in favour of that of cancer. In favour of aneurism there were the following:—The patient's parents and immediate relatives were all healthy; none of them had suffered from any malignant disease. The characters of the tumour were rather those of an aneurism than of a cancerous growth. It had a smooth surface, was of a rounded form, was not movable, though firm it was by no means hard, and though pulsating most distinctly in the epigastrium, it appeared to extend rather to the left of the mesial line. Pulsation, moreover, was of a distinctly expansile character. The absence of distinct murmur did not seem to prove much either way; for, on the one hand, in cases of abdominal aneurism, murmurs may be absent altogether, or may vary much in character; while on the other, murmurs very commonly accompany cancerous growths situated in the region where the tumour was in this case. Finally, in favour of aneurism, was the absence of ascites, œdema, or any distention of the abdominal veins. It should be added that the patient, though weak and anæmic, presented none of the appearance of the cancerous cachexy.

On the other side, there were certain circumstances which seemed in favour of the existence of cancer. The most important of these was the fact that the patient had been in bad health for some time previous to the detection of the tumour. This is a point of great importance, which has been strongly insisted on by Dr Stokes,[2] and to which, in this case, I am inclined to think I attached too little value. It is true, it might have been considered that the previous sufferings of the patient had been due to an attack of independent disease, and it might even have been supposed that the frequent straining at stool which was present for some months might have been concerned in the production of an aneurism; but, on the other hand, simple chronic dysentery in a healthy locality, and in a strong young man free from any organic disease, is rare in this climate. Another circumstance favouring the diagnosis of cancer was the constitutional condition of the patient. Though there were not all the symptoms present which usually go along with malignant disease, he was in a weak and anæmic condition. No doubt this might have been accounted for by the irritation of an aneurism, causing frequent pain of a peculiarly distressing character, and leading to habitual sleeplessness; but it has often been remarked that, in cases of aneurism, even accompanied by great suffering, the health of the patient may be but little affected, and in the intervals between the paroxysms his appetite may be good, and he may be capable of undergoing considerable exertion. Against the view of cancer, it had, however, to be borne in mind that there was not only an absence of any serous effusion, but that there was no external glandular enlargement, or any evidence of visceral disease. On the whole, though with considerable hesitation, I arrived at the conclusion that the case was one of aneurism of the abdominal aorta, in the neighbourhood of the cœliac axis.

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[1] On Diseases of the Heart and Great Vessels. Third edition. P. 499.

[2] The Diseases of the Heart and the Aorta. P. 641.

This opinion was much strengthened by the hæmatemesis which occurred on three occasions previous to the fatal hæmorrhage. Vomiting of arterial blood I looked upon as conclusive evidence of the presence of an aneurism. There was no reason to suspect disease of the stomach; cancerous glands did not seem likely to cause arterial hæmorrhage from the stomach; whereas a communication between that viscus and an aneurismal sac by a small opening which had again become closed by a clot, seemed to afford a satisfactory explanation of the phenomenon in question. It may also be added that the hæmorrhage on the first occasion afforded very considerable relief to the patient. The mode of fatal termination, due evidently to the giving way of a very large vessel, still farther supported my opinion, and I went to the post-mortem theatre feeling absolutely certain that an abdominal aneurism would be found.

The account already given of the appearances found, which explains quite satisfactorily the symptoms observed during life, illustrates well the extreme difficulty of coming to a correct diagnosis in many cases of abdominal disease. I did not suspect, and had no reason to suspect, the existence of disease in the thorax, and therefore had not the least reason to suppose that there was any communication between the aorta and the œsophagus. But for the hæmatemesis, I might still have entertained some doubt as to the nature of the case, and the mechanism of the hæmorrhage in this case was certainly most remarkable A cancerous gland in the posterior mediastinum had undergone gradual softening, whereby an opening was first effected into the œsophagus, and finally into the aorta. The hæmorrhage was precisely of the character which is usually met with when an aneurismal sac communicates with a mucous membrane. One gush of blood causing instant death does not commonly occur at the moment when the communication is established, but it frequently happens that several small hæmorrhages precede the fatal result.

The lesson which the above case has taught me, is to attach in doubtful cases of abdominal aneurism the greatest value to the early history of the seizure, and to view with suspicion all cases of presumed aneurism which are accompanied by severe constitutional disturbance.

Part Second.

REVIEWS.

Minutes of the General Council of Medical Education and Registration. 8vo, pp. 327.

In July 1862, we last reviewed the proceedings of this body; for, although we have regularly printed the Minutes since that date, we did not feel called upon to comment upon or discuss them at length. Our reasons for this silence appear sufficiently in the article itself, and if we now depart from the rule we have been lately following, it is only because we think that the last meeting gave some faint indications of the Council becoming a more useful body than it has hitherto proved itself to be. The experiment, instituted in 1864, of admitting the public through reporters to be present at the discussions, was a hazardous one; but, although it has undoubtedly produced some of the evils which its opponents anticipated, and has tended considerably to the multiplication of talk, yet it has also had a wholesome effect, and has brought the Council much more under the influence of public opinion. We have now a better means of judging who are the members really zealous for the advancement of the profession, who are those who obstinately obstruct all reform, and who are the timid and vacillating, whose votes may always be counted on as against improvement, when prejudices have to be assailed or class interests interfered with.

The preparation of the future medical practitioner consists of course, in the first place, in duly arranging that his education shall be sufficiently extensive, and in the second place, in providing that the extent to which he has availed himself of the means for education at his disposal shall be efficiently tested by adequate examination.

The education naturally divides itself into two parts:—

1. *The preliminary*, the object of which is twofold:—

a. To prepare the mind of the student for the due reception of the professional part of his studies.

b. To fit him to take his place in society as a member of a learned profession.

2. *The professional*, in which he acquires that knowledge of the human body and its functions in the natural state, which enables him to detect those deviations from that natural state which are termed diseases; the causes, symptoms, and terminations of these diseases; a knowledge of those agents which control or arrest these diseases, and the best manner of applying them; together with certain subsidiary or collateral branches, which in the ordinary routine of practice he is often called upon to exercise.

At the date of the passing of the Medical Act, most schools and examining bodies were pretty much agreed on the extent of professional education, but the greatest difference prevailed in regard to the preliminary education; what was required being in most cases of the most meagre possible description, and far below what was exacted from entrants into the other learned professions. Accordingly, at almost every meeting the Council have professed to deal with this; but it is only in this the ninth year of their costly existence, that they have taken the common-sense plan of telling the profession and the public distinctly what they conceived to be the minimum amount of general education which a medical man should be required to possess.

On the fourth day of their meeting in 1866, and after the subject had been considered and reported on by a committee, the Council came to the following deliverance:—

> "That the following subjects constitute a minimum to be required of candidates for preliminary examination, viz.:—
>
> *Compulsory Subjects*,—
>
> 1. English Language, including Grammar and Composition.
> 2. Arithmetic, including Vulgar and Decimal Fractions.
> 3. Geometry: First Two Books of Euclid.
> 4. Latin, including Translation and Grammar.
>
> And 5. One of the following
>
> *Optional Subjects*,—
>
> 1. Greek; which after 1869 is to be compulsory.
> 2. French.
> 3. German.
> 4. Natural Philosophy."
>
> —*Minutes*, pages 74 and 88.

We congratulate the Council on having at length freed themselves from the trammels of a resolution first adopted on the 10th of August 1859, and which has more or less influenced all their proceedings until the present year. It appeared in a Report of a

Committee on Education, adopted on that day by the Council, and was to the following effect:—

"That without professing to lay down any complete scheme of general education for persons intending to become members of the medical profession," etc., etc.

Why should a body having the weight and authority of the Council not have at once laid down such a scheme? The absurdity of this bashfulness on their part seems early to have struck some members of the Council, for on the 19th of June 1860, when, on Dr Andrew Wood, seconded by Mr Green, moving the re-affirmation of this non-intervention principle, Dr Apjohn, seconded by Dr Corrigan, moved that a board of examiners be constituted in each division of the kingdom, to test the qualifications of candidates in general literature, and annexed to their motion a programme of subjects on which candidates ought to be examined.

This motion, however, the Council rejected. Year after year the inane recommendation of the committee of 1859 was re-enacted, apparently without opposition, until the 27th of April 1864, when, on its being again moved, Dr Corrigan, seconded by Mr Rumsey, proposed as an amendment a specific list of subjects for general education, and that the Council should enact that the certificate of no body which did not examine in all of these should be held sufficient by the Council. This amendment having been negatived, Dr Alexander Wood, seconded by Dr Andrew Wood, moved:—

> "That a minimum standard of preliminary education and examination shall be fixed by the Council; that testimonials granted by the National Educational bodies may be admitted, provided the Council deem the education required of them to be sufficient; and that a sub-committee be appointed to prepare a minimum standard, to be submitted to the Council for its consideration."

The Council, however, refused to adopt this very reasonable proposal. In this state, then, the matter remained until 1866, when the Council at last reached what, in our humble opinion, should have been its starting-point.

The minimum amount of education to be received by a student before commencing his professional studies having been thus authoritatively fixed, we are not struck either by the extent or depth of its requirements. It may, however, be pleaded, that at many examining boards this amount, small as it is, is a novelty, and that the Council, having inserted the fine end of the wedge at last, can gradually drive it more efficiently home.

The only subject which excited much discussion at the Council Board was whether Greek should be optional or imperative. The feeling of those who opposed its being imperative appeared to be that modern languages were perhaps more useful to the student of medicine. They were, however, found on a division to be a minority in the Council, and Greek, optional now, is to be imperative after 1869.

As a means of securing that a regular examination in preliminary education shall be passed previously to the student commencing his professional studies (for this seems the principal purpose which it is intended to subserve), the Council two years ago devised the cumbrous and troublesome expedient of causing a register of medical students to be kept by the three registrars in the three divisions of the kingdom. In this document it is proposed to set forth:—

1. The date of registration, which must take place within fifteen days after the commencement of professional education.
2. The name of the student.
3. The body by whom his *testamur* of having passed an examination in preliminary education was granted, and the date when the examination was passed.
4. The place of medical study at which he proposes to acquire his medical knowledge.

It is plain, that were such a register accurately kept, it would afford a most efficient check, albeit a troublesome one, on students entering on their professional studies without having passed an examination in general education. It would also secure the due observance of that regulation which has stood for some time among the recommendations annually transmitted by the Medical Council to the licensing bodies, viz.:—

> "That the course of professional study required for a license shall comprehend attendance during not less than four winter sessions, or three winter and two summer sessions, at a school recognised by any of the licensing bodies mentioned in Schedule (A) to the Medical Act."

Judging from the tenor of the Report of the Committee, brought up by Dr Embleton, on the working of the system (Minutes, page 138), it does not seem to have been very successful the first year, and the Branch Councils received power to deal with many exceptional cases. Some of the schools (Glasgow and Aberdeen Universities, for example), appear to have set at defiance the regulations of the Council altogether, and received a pretty broad hint, if we may judge from the report of the discussion, that such disobedience would not be repeated with impunity.

The Council do not appear to have occupied much time in considering the subject of professional education, confining themselves to the three meagre recommendations issued in former years. The first (already quoted), laying down the duration of the period of study; the second being a piece of general advice to the licensing bodies, of the true Pecksniffian character; the third, intimating that the Council will view with approbation any encouragement held out by the licensing bodies to students to prosecute the study of the natural sciences before they engage in studies of a strictly professional character.

Surely in the ninth year of its existence the Council might do more than deal in such vague generalities, and might vindicate its true position as a guide to the licensing bodies, by laying down a minimum course of professional study, in the same way as it has at last summoned courage to do in regard to preliminary education.

From the education we naturally pass to the examination of the student, and in their dealing with this important matter the late meeting of the Council has shown that the body has tardily awakened to its responsibilities in this matter.

The Medical Act of 1858 provided, sect. xviii., that—

> "The several colleges and bodies in Schedule (A) to this Act shall from time to time, when required by the General Council, furnish such Council with such information as they may require, as to the courses of study and examinations to be gone through in order to obtain the respective qualifications mentioned in Schedule (A) to this Act, and the ages at which such courses of study and examination are required to be gone through, and such qualifications are conferred, and generally as to the requisites for obtaining such qualifications; and any member or members of the General Council, or any person or persons deputed for this purpose by such Council, or by any Branch Council, may attend and be present at any such examinations."

In passing this regulation, it is evident that the legislature contemplated a thorough supervision of the examinations by the Medical Council, or by persons who might seem to them competent to discharge the important and delicate duty.

Accordingly, on the 18th of June 1860, being the third year of the Council's existence, Dr Alexander Wood moved for a committee to prepare a scheme for the visitation of examinations; of this committee he was appointed chairman; and on the 21st June, three days thereafter, he tabled their report, unanimously recommending that one or more inspectors of examinations should be appointed to attend one or more of the examinations of each licensing body, and to report fully on the character and extent of the examination. Although this report was tabled five days before the termination of that session, the Council do not appear to have considered it of sufficient importance to deserve consideration, or probably, to speak more correctly, they shrunk from facing the subject, and it was not until the 29th of June 1861 that the report was considered.

Dr Corrigan then moved, seconded by Mr Lawrence:—

> "That it does not appear expedient at present to take any steps in regard to the visitation of examinations of the various qualifying bodies."

This amendment was carried, and at a subsequent meeting (July 18, 1861), the carefully-considered provisions of the Committee's Report were one by one rejected.

In this state the matter was allowed to remain until the 6th of April 1865, when Mr Syme, seconded by Dr Andrew Wood, carried the following resolution:—

> "That each of the Branch Councils, or such of their members as may be deputed by such Councils, shall from time to time visit the examinations, preliminary as well as professional, conducted by the qualifying bodies in their respective divisions of the United Kingdom, and report the results of their observations to the General Council."

The Branch Councils appear to have taken up the remit made to them with an earnest determination to do their duty in the matter; and although we would have much preferred the plan of an independent visiter or visiters, as suggested by the Committee of 1860, yet we are bound to say that the Branch Councils have far exceeded our expectations in the manner in which they have discharged the duty imposed on them. Sir Dominic Corrigan, true to his instincts, did indeed do his utmost to provoke disloyalty in the Irish Branch, and refused to take any part in the duty assigned by Act of Parliament and by the Council. It is worthy of remark, that while in 1861 he showed himself to be the uncompromising opponent of the visitation of examinations by deputy, in 1865 he was no less determined against visitation by the members of Council. It would, we think, have been more conscientious had he resigned his seat in the Council when he found himself precluded from carrying out in one or other of the two ways proposed the provisions of an Act of Parliament which he was bound to administer, he having no *via media* of his own to propose.

The results of these trial visitations were laid before the late meeting of Council, and give a valuable account of the method of conducting the examination pursued at the different licensing Boards. It may be that excellencies are perhaps too ostentatiously praised, and faults too delicately hinted at; but, after all, the real value of such reports consists in giving a general stimulus to all bodies under inspection, and in making Boards, who are bent on improving their system, aware of plans which have been followed elsewhere with success. We have access to know that the effect has been a very general desire on the part of the examining Boards in Scotland to improve their examinations, and that meetings with a view to accomplish this have been held both in Edinburgh and Glasgow.

A discussion of some importance has arisen in consequence of a report by Drs Andrew and Alexander Wood on the examinations of Glasgow University. We allude to the attempt to substitute periodical class examinations for the pass examinations. This system was noticed in the Report, and somewhat severely commented on in a speech by Dr Andrew Wood at the Council. The attack thus made has called out a long reply by Professor Gairdner (*Lancet*, 14th July), in which he displays all his usual ability, though we cannot help thinking that the tone of the letter is not a little arrogant and presumptuous. The plain answer to all such special pleadings is, 1*st*, That such a proceeding is contrary to the Universities (Scotland) Act; 2*d*, That by that Act the University examiners are constituted judges of the qualifications, not of their own students only, but also of those of gentlemen who have studied in other schools and under other teachers. It is therefore manifestly unfair to give a privilege to the students of one teacher to the detriment of those of another; to refuse to recognise the examinations of one teacher, and to admit those of another; or to place on an equality examinations over which the governing body of the University can exercise some control, and those of teachers beyond its walls over whom they have no jurisdiction whatever. Besides, however strong some of the arguments for the new system may be theoretically, if all tales be true a brief trial of it in Edinburgh revealed evasions which were not dreamt of in the philosophy of its inventors.

It is pleasant to observe, both in the reports and in the speeches to which they gave rise, the testimony borne to the excellence and honesty of the examinations in our university (University of Edinburgh.) We were of the number of those who agreed with the Colleges of Physicians and Surgeons in contending before the Privy Council for more stringent regulations regarding the examinations of the Scottish Universities. We saw, indeed, at the time that it rested very much with the administrators of the ordinance whether the examination should be a stringent or a lax one. We think we can gather from these reports that the Scotch Universities afford samples of both methods of interpretation, but that the University of Edinburgh cannot be blamed for any undue laxity. Equally pleasant was it for the friends of our *Alma Mater* to hear the statement made by Dr Alexander Wood at the meeting on the 19th May, that the Edinburgh University, after the other Scottish Universities had declined to support her, had gone forward alone to obtain powers from the Privy Council to import greater stringency into her examinations, by compelling all students to pass a preliminary education before entering on their professional studies.

We do not propose to stop to criticise the details of these reports. The succeeding ones will probably be less full and more instructive; but we do most sincerely congratulate the Council on having at last made an attempt to fulfil this statutory duty, albeit we reserve our opinion that the attempt might have been more efficiently made in another direction.

As a subject allied to those of examination we shall next consider the returns from the Medical Departments of the Public Service. At page 151 of the Minutes appears a statement, sent by authority of the Director-General of the Army Medical Department, of the results of the examination for entrance into the public service, and opposite to page 62 is inserted a similar table of the results of the examination for the Navy.

There appears to be a strong desire on the part of some members of the Council to estimate the strictness of the examinations of the various licensing Boards by the position occupied by their licentiates at these examinations for admission into the public service. Dr Andrew Wood and Sir Dominic Corrigan are strong advocates of the efficiency of these tables as a test, while Dr Alexander Wood and Mr Syme, although admitting their value in many respects, are not disposed to elevate them so highly for this specific purpose. We are not surprised that the former gentleman should have expressed himself so decidedly on the subject, as the body which he represents in the Council (The Royal College of Physicians of Edinburgh) does not appear to advantage in the returns.

From the table furnished by the Army Medical Board, and printed at page 151 of the Minutes of the Council, it appears that 28 candidates presented themselves from the Edinburgh College of Pysicians, of whom 12 passed and 16 failed, the largest proportion of rejections on the list, with the exception of Bachelors of Medicine and Masters of Surgery in the University of Dublin, of which candidates the rejected were double the number of the passed. But Dr Alex. Wood very properly contended that he was entitled to know what other diplomas the candidates set down as from the Edinburgh College of Physicians possessed, and on what particular subjects they were rejected. He clearly showed that by regulations which had been repeatedly submitted to the Medical Council, and to which that body had never taken exception (see Minutes, 1862, page 25), most of the candidates who came before the College of Physicians had already been examined by other bodies, and placed on the Register. It was therefore evident that no laxity could be charged against the College of Physicians of Edinburgh, unless the candidates were rejected in Medicine, Materia Medica, Medical Jurisprudence, or Midwifery,—the four branches in which alone candidates presenting themselves from other Boards are examined. In the corresponding return from the Navy Board two candidates, holding the license of the Edinburgh College of Physicians, were examined; of these, one was rejected for bad Latin, and bad Surgery, and indifferent Anatomy. For the Latin the Edinburgh College of Physicians is not responsible, as they must have taken the *testamur* of one of the bodies whose examination is allowed by the Medical Council to be sufficient; and the indifferent Anatomy and bad Surgery must be charged against the College of Surgeons of Edinburgh, whose diploma this gentleman also held, and to whom the examination on these branches was intrusted. By this Navy return it would appear that, of licentiates from the various bodies, the proportion of those passing was as follows:—

Royal College of Physicians, London,—all passed.
Royal College of Physicians, Edinburgh,—one-half passed.
King's and Queen's College of Physicians, Ireland,—all rejected.
Royal College of Surgeons, England,—nearly one-half rejected.
Royal College of Surgeons, Edinburgh,—all rejected.
Faculty of Physicians and Surgeons, Glasgow,—one-half passed.
Royal College of Surgeons, Ireland,—one-third passed.
Licentiates of the Society of Apothecaries, London,—3 out of 5 passed.
Licentiates of the Society of Apothecaries, Dublin,—one-half rejected.
M.B. Univ. Edinburgh,—all passed.
M.B. and M.S. Aberdeen,—all passed.
M.D. Univ. Glasgow,—all passed.
Lic. in Midwifery, King's and Queen's College of Physicians,—all rejected.
M.D. St Andrews,—all passed.

The Minutes contain, however, a table of much more value, which, supposing the candidates presenting themselves at the different Boards are much of an average capacity, enables us to estimate much more nearly the comparative strictness of the different examining Boards. It is to be found on page 281 of the Minutes. Making a rough calculation it would appear that the number rejected by each of the Boards is pretty nearly as follows:—

	1st Examination.		2d. Exam.
Royal College of Physicians, London, . . .	1-7th.		1-5th.
Royal College of Surgeons, England, . . .	1-3d.		1-7th.
Society of Apothecaries, England, ...	1-10th.		1-12th.
University of Oxford, ...	1-3d.		0
University of Cambridge, ...	1-2d.		0
University of London, ...	1-2d.		1-20th.
Royal College of Physicians, Edinburgh, . .	1-4th.		1-5th.
Royal College of Surgeons, Edinburgh, . . .	1-3d.		1-5th.
Faculty of Physicians & Surgeons, Glasgow, .	1-8th.		1-12th.
	1st.	2d.	3d.
University of Aberdeen, ...	1-11th.	1-5th.	1-12th.
University of Edinburgh, ...	1-6th.	1-3d.	1-12th.
University of Glasgow, ...	1-4th.	. .	0
King's and Queen's College of Physicians, .	1-8th.	. .	1-8th.
Royal College of Surgeons, Ireland, ...	. .	1-10th.	1-10th.
Apothecaries' Company, Ireland, ...	. .	1-9th.	1-3d.
University of Dublin, ...	1-3d.		1-8th.

Next perhaps in importance to the subjects we have mentioned, was the preparation of a new Bill for amending the Medical Acts. The real labour of this had been accomplished during the session of the Council for 1865; but the Bill came back with the revision of the Home Office, and with the strange request from the Government to a body constituted by Act of Parliament, that the Medical Council should endeavour to have it brought before the Legislature by a private member of Parliament.

With two exceptions, the provisions of the Draft Bill are merely intended to facilitate the working of the Medical Act, but these two are of importance to the profession and the public.

The first is the amendment of the 40th or penalty clause of the Act of 1858, which it is proposed shall be altered to the following effect (page 130) :—

> "If any person practising Medicine or Surgery, or engaged in the treatment of diseases or injuries, not being registered under the Medical Acts, takes or uses any of the designations enumerated in Schedule (A) to the Medical Act (1858), as amended by this Act or by any other of the Medical Acts, or the designation of Physician, Surgeon, Doctor, or Apothecary, or any other designation used by or used to distinguish duly qualified practitioners of Medicine or Surgery, or any class thereof, or the designation of Professor of Medicine, or of Professor of Surgery, he shall, for every such offence, be liable, on summary conviction, to a penalty not exceeding twenty pounds."

It is not contended that the clause, even in its amended form, is at all perfect, and it will be observed that, should it become law, no man can practise Medicine under any medical title unless registered under the Act.

The other clause refers to the admission of graduates of colonial and foreign universities under certain restrictions, in the arrangement of which, we think, the Council showed a wise discretion.

In the course of the discussion on this amended Bill, Sir Dominic Corrigan took occasion to follow a practice which he has made peculiarly his own of late years, viz., that of assailing the Council with every term of obloquy. It is a curious circumstance connected with this attitude of Sir Dominic, that, as Mr Hargrave pointed out, on every occasion where loyalty to the Council demanded vigorous and decided action, the vote of Sir Dominic was sure to be for the party who threw impediments in the way.

That he did not always think the Council so useless a body as he now affects to do, and that he did not always regard an amended Medical Act as a mere perpetuation of a useless and effete body, is proved by the following facts.

In the Minutes for June 14, 1860, appears the following:—

Moved by Dr Corrigan; seconded by Dr Apjohn, and agreed to:—

"That the Medical Council having had their attention called to various defects in the Medical Act which interfere with its efficient working, appoint a committee to report on this subject before the close of the present session of the Council.

"The committee to consist of the following members: Dr Corrigan, *chairman*," etc.

This committee, with Dr Corrigan as chairman, was re-appointed in June 27, 1861. Dr Corrigan gave in a report in its name on the 5th July 1861; and again on May 16, 1862; and again, very fully,—a complete Act being embodied in the report,—on the 1st June 1863.

On the 3d June 1863, this elaborate report was referred to the Branch Councils for their opinion. On the 3d May 1864, the reports of the Branch Councils were given in and considered; and after a discussion extending over two days, the following motion made by Dr Alexander Wood, and seconded by Dr Sharpey, was carried:—

"That the Council, while appreciating the labour and care bestowed by the Medical Acts Amendment Committee on the heads of a Medical Bill proposed in their report, regret that it is impossible, at this late period of the session, to enter on the full consideration of so wide and important a subject.

"That the Council request the Branch Councils, in the interval between this session and the succeeding one, to consider how Clauses XX., XXXI., and XL. could be best amended.

With this, Dr Corrigan's Bill would appear to have disappeared; and from this time may be dated the bitter malevolence which he has displayed against the Council and certain of its members.

We may congratulate the Council on the attack of Sir Dominic, as it was the means of calling out a vigorous speech from Dr Acland, in which he administered to the learned baronet a severe castigation.

Coming as this did from one of the most polished and courteous members of the Council, who is ordinarily afraid to say anything approaching to harshness, it told with peculiar force, and must have been felt by Sir Dominic even more than the forcible exposures of Drs Andrew and Alexander Wood, who have never been distinguished for expressing their opinions in mild language, or refusing to call things by their proper names.

The Pharmacopœia Committee reported that the whole of the second edition, with the exception of the appendix, was in type, and that they had reason to hope that within three months it would be ready for circulation among the members of the Council. Three important communications were presented to the Council in regard to this publication,—

1*st*, A letter from Dr W. A. Miller, President of the Chemical Society, stating that the system of notation adopted in the first edition was one that was rapidly disappearing from chemical teaching in this country, and suggesting that, in the forthcoming edition, the use of chemical symbols might be advantageously dispensed with.—(*Minutes*, p. 160.)

On this, the Council, on the motion of Professor Apjohn, seconded by Dr Smith, resolved—

> "That it be an instruction to the Pharmacopœia Committee to give for each therapeutical compound of definite constitution occurring in the forthcoming edition of the Pharmacopœia two formulæ; the first being that in ordinary use at present; the second being one constructed in accordance with the more recent views of what is called the 'unitary system.'"—Page 162.

2*d*, A letter from the Metric Committee of the British Association for the Advancement of Science, suggesting that in the forthcoming edition of the Pharmacopœia the metric system should be introduced side by side with the imperial.—*Minutes*, page 298.

On this, the Council resolved, on the motion of Dr Sharpey, seconded by Dr Apjohn:—

> "That the General Medical Council are not prepared to adopt in its full extent the suggestion of the Metric Committee of the British Association, but the Council will direct that a complete comparative table of metric and imperial weights and measures, with instructions for their mutual conversion, shall be inserted in the forthcoming edition of the British Pharmacopœia."

3*d*, A memorial from the Physiological Section of the British Association, craving that, by the aid of pecuniary grants, and the appointment of suitable persons to undertake such an inquiry, an investigation should be made into the physiological actions of medicines.—*Minutes*, page 6.

This was discussed at two several meetings. Ultimately, Dr Acland, seconded by Dr Paget, proposed the following resolution, which was lost by the casting vote of the president, the Council being equally divided in regard to it:—

> "That it be an instruction to the Pharmacopœia Committee to take steps to ascertain whether any or what limits have been imposed by the Medical Act on the reports and investigations which the General Council might be fit to obtain or direct into the properties of the medicines and compounds of which the Council is required to furnish a list; and specially, whether the Council is limited by the Act to inquiries as to the composition of articles of the Materia Medica, and the modes of preparing and compounding them."—Page 162.

The Council had no occasion during this session to exercise its form of striking unworthy members of the profession off the register. Mr Richard Organ, whose name was removed in 1859, and who proved contumacious as long as he could, now appears thoroughly humbled, and petitioned the Council to give permission to one of the licensing bodies to take him on trial *de novo* by examination. The Council most properly held that his offences were of too grave a character to admit of his being again received into the profession, and unanimously rejected his petition.

A change in the constitution of the Council which may effect important ends either for weal or woe, was made by extending the number and powers of the executive committee,—one Scottish and one Irish representative being added to it, and greatly enlarged powers being conferred upon it.

Time will show whether an *imperium in imperio* is a desirable arrangement, and whether a divided responsibility will work well.

Clinical Surgery in India. By J. FAYRER, M.D., F.R.C.S. and F.R.S. Edin.; Surgeon Bengal Army; Professor of Surgery in the Medical College; and First Surgeon of the Medical College Hospital, Calcutta, etc., etc. London: John Churchill & Sons: 1866: pp. 769.

To those of us who knew the author when, with the enthusiasm of a student and the appreciation of a ripe surgeon, he spent part of his furlough in the wards and lecture rooms of the Edinburgh Royal Infirmary, this work has a deep personal interest; to all students of surgery, it will be found to convey most valuable information.

The motto on the titlepage appropriately sounds the keynote of the book, "Non hypotheses condo, non opiniones vendito, quod vidi, scripsi."

With the exception of an address on "Surgery in Bengal," read to the Bengal Branch of the British Medical Association, with which the book begins, and an Introductory Address to the Students of the Calcutta Medical College, with which it closes,—it consists of series of cases of different kinds, with a selection from the clinical remarks made upon each.

A few of these may be noticed in detail.

The first on Osteo-Myelitis is of exceeding interest and importance. This formidable complication of compound fractures, and especially of gunshot injuries of the shafts of long bones, has lately received much attention in the Memoirs by Jules Roux of Toulon, Longmore, and Holmes. Dr Fayrer's contribution to the subject gives a good account of the symptoms. From it the following extract may be given, as being interesting in itself, and a fair specimen of the character of the work :—

"The symptoms of this formidable complication are said by some authorities to be obscure. No doubt, where the bone is undivided, and not exposed, they are so. But when the surgeon has the opportunity of examining the medulla in the divided bone, the obscurity should cease. The symptoms then generally make their appearance a few days after the operation; it may be from four to eight, or even later. The stump very probably has being doing well; it may, perhaps, have sloughed a little; the slough separated, and healthy granulations made their appearance. The flaps may have united all but at a point or two, whence discharge continues. The pain is not acute, and there may be even little more than unusual tenderness over the stump. On pressing the finger against the bone through the soft parts, it may be felt to be harder than it would be, were it covered by granulating periosteum. The discharge, also, is not well-elaborated, healthy pus. A probe is introduced, and dry denuded bone is felt. There may be slight fever, perhaps rigors, the pulse being slightly or much quickened."—Pp. 90, 91.

All these symptoms may possibly be those of exfoliation of the end of the bone only, which nature might easily throw off. The following are the special symptoms of inflammation of the medulla, which will almost certainly involve either amputation higher up, or the death of the patient:—

"Therefore, when the symptoms I have mentioned make their appearance, it is right to ascertain, by further exploration (I prefer the finger gradually insinuated into the sinus to any other instrument), the exact condition of the medulla; and, if any difficulty occur, the stump should be sufficiently re-opened to make a satisfactory examination. In cases of incipient inflammation, the medulla will be found protruding like a fungus from the central cavity, and the bone surrounding it exposed to a greater or less extent. At a later period, the end of the medulla is found already dead, blackened, and encrusted, but within, it is a putrid mass of bone, debris, and pus. In the former stage, you can wait to watch progress; the mischief may, perhaps, be limited, and a complete ring of bone be thrown off. But, in the latter case, interference is immediately necessary, and that, I fear, can be nothing short of amputation, either above the next joint, or, perhaps, in a very young person, at the epiphysis. The constitutional symptoms that indicate the necessity of amputation are those of pyæmia; and, as I have remarked, a pulse over 120, dry hot skin, smooth tongue, even though moist—above all, signs of mischief in the chest or liver, are certain indications that the time has come, and it is necessary to be very watchful lest the time be overpast."—Pp. 91–93.

Thirty-two cases of amputation are then briefly detailed. The results are by no means flattering to the sanitary conditions of the hospital, as a full half of the cases succumbed; nine to osteo-myelitis, pyæmia, or both combined; six to tetanus, gangrene, and exhaustion. In three cases, however, in which secondary amputation of a higher joint was performed in time, for osteo-myelitis, the patients survived. All three were cases of amputation of the upper extremity, two at the shoulder-joint in boys, æt. twelve and eight respectively, one above the elbow in a man of thirty.

A case of popliteal aneurism was treated by ligature of the femoral. However, the sac suppurated; secondary hæmorrhage occurred; the common femoral was tied; and the patient recovered.

Under the hardly appropriate name of Perinæal Section, Dr Fayrer reports a series of six cases in which he performed Mr Syme's operation for the relief of stricture by external division on a grooved staff. He sums up his experience and his opinion of the operation in the following words:—"The cases in which I have had recourse to perinæal section have been of the most obstinate and severe character; and in each I have been as much impressed by the completeness as by the promptness of the relief afforded."

Under the head of the Radical Cure of Inguinal Hernia, a large series of cases is put on record, treated by various modifications of the plug and invagination method. Of thirty-eight cases given in an abstract, twenty-four were cured, and six relieved. No death occurred.

Under the head Tetanus, three cases of deep interest are recorded as cured, one by division of the median nerve, the other two apparently by enormous doses of opium and hemp. The patients were encouraged to smoke the opium mixed either with hemp or tobacco, in very large quantities, to which Dr Fayrer ascribes the favourable result of treatment. One of the patients consumed in thirty days ℥xlii of opium-goolie, a mixture of equal parts of opium and guava leaf, besides a quantity of chloroform and indian hemp.

The section on Lithotomy contains records of five cases, one of which was a difficult one from the stone being encysted.

Two cases of amputation at the hip-joint, one successful, the other fatal from tetanus, are very fully reported.

In two cases Dr Fayrer tied the femoral artery for elephantiasis of the leg, as recommended by Carnochan of New York, and Butcher of Dublin. The first patient died, apparently of pyæmia, within three weeks after the operation; the second recovered with temporary improvement, but, as seen in the following table of measurements, with really very little permanent advantage:—

Dates of Measurement.	Round the Instep.	Above the Ankle.	Below the Knee.	Remarks.
	Inches.	Inches.	Inches.	
21st June,	10½	12½	14	Day before operation.
6th July .	9¼	10	11⅝	Fourteen days later.
1st Aug. .	9⅝	10	12¼	Discharge from hospital.
18th Nov.	10¼	12¼	13¾	Five months after.

There are many other cases of interest which might be alluded to, some that might be criticised and discussed; enough has been said, we hope, to make our readers wish to possess the book and judge for themselves. Still praise must not be unmixed; there is much evidence of haste. The book would have been a better one had the author given himself time to make it shorter. There are here and there repetitions and redundancies, which result possibly from the fact that the author was unable to see it through the press. The type and paper are pleasant, and the few illustrations well executed.

The work is dedicated to Mr Syme "as a mark of the author's profound respect."

Tapeworms (Human Entozoa): Their Sources, Nature, and Treatment. By T. SPENCER COBBOLD, M.D., F.R.S., Lecturer at Middlesex Hospital. London: Longmans, Green, & Co.: 1866.

DR COBBOLD'S great work on "Entozoa" has placed him in the foremost rank of modern helminthologists. The object of the present little volume is not to supersede it, but to lay before the profession, at a very moderate price, some of the most important facts which have been ascertained regarding one of the great groups of human parasites.

Having given, in a short introduction, a complete list of the human entozoa, Dr Cobbold proceeds to describe the tapeworms, first in their mature, and then in their hydatid state. As we formerly laid before our readers an account of Dr Cobbold's larger work, we shall at present only refer to certain new points which he has established. Of these the most important is, that the author, in conjunction with Professor J. B. Simonds, has succeeded in producing measles in the calf by the administration of the eggs of the *Tænia mediocanellata.* These experiments are thus described:—

"The experimental researches of Leuckart and Mosler abroad, and of Simonds and myself in this country, have satisfactorily determined the origin of this parasite. We have incontestably proved that the human body becomes infested in consequence of our eating veal and beef. It seems strange to speak of measly beef, and yet, probably, more diseased beef exists in this country than similarly affected pork. I mean to say that the flesh of cattle used as food is more commonly infested with the larvæ of tapeworms, than is the flesh of swine. But the larvæ in the one case are essentially different from the larvæ in the other. The cysticerci, as they are more properly termed, differ relatively both as regards size and structure. Those in beef are comparatively small, scarcely so large as a pea, and are readily overlooked by the flesher. Those in pork are sometimes as much as nine-tenths of an inch in length, and always sufficiently conspicuous to the naked eye. The beef measle, like its adult representative, has a rather large and unarmed head, whilst the pork measle has a smaller head, surmounted by a double crown of hooks. There is no need therefore to confound the two species either in their larva or adult conditions.

"It may interest the reader to explain briefly the nature and circumstances attending one of our experiments. In the case of the calf, I procured a quantity of the ripe or sexually mature segments of the unarmed tapeworm. These were immersed in warm milk, and introduced by the mouth. Sixteen days after the worm feeding, some symptoms of infection showed themselves, but in a few days more they entirely subsided. A second administration of the worm-segments was therefore decided on. Again, fifteen days after the second feeding, fresh symptoms of irritability supervened; and for a few days the distress of the animal seemed to forebode the likelihood of a fatal result. However, after a while its condition improved; the general expression of the face indicated returning health; the breathing and pulse improved; the tremors subsided, and the appetite returned. Convalescence being perfectly re-established, the animal quickly gained flesh, and in two months' time it might have been sold to a butcher as a perfectly healthy and well-nourished animal. In truth it was healthy. Only, as we shall presently see, its body was full of parasites resulting from the worm feeding. About three months after the date of the first administration the calf was slaughtered. The flesh was carefully examined, and according to my estimate it contained no less than eight thousand measles. These measles were undoubtedly the young of the unarmed tapeworm, presenting as they did all the essential characteristics which I have already described. The experiment was a perfect success. It proved the source whence the human body derives the unarmed tapeworm; and also whence cattle derive the eggs necessary for the development of the measles. As it is by such means that our science is advanced and the welfare of the human race is provided for, no person can fairly object to the legitimate employment of these experiments."

And again, in the appendix, he says:—

"I will here only further call attention to one practical point. It is this: the meat which we eat may contain a very large number of larval parasites, and yet the animal whence the flesh was obtained shall have appeared perfectly healthy on the day that it was slaughtered. In our calf I calculated that there were between seven and eight thousand measles in the flesh; but, even to skilled veterinary eyes, at the time of slaughtering this animal appeared perfectly sound and in good condition. We might have sold this animal to a butcher, and have enjoyed the satisfaction of knowing that we had done our best to ensure the development of *Tænia mediocanellata* in a considerable number of his customers. Those muscles usually forming the choicest parts offered by the salesman were just those portions which were most abundantly infested. Any person dining moderately off an imperfectly cooked 'fillet' from this source would unquestionably have found himself the future entertainer of at least a dozen tapeworm 'guests.'

"It takes about one year for the 'measles' to lose their power of doing harm to the consumer. In this time a natural death of the larva results from calcareous degeneration. This is proved by our experiments upon a young cow, the particulars of which are not yet published.

"Under ordinary circumstances it is most probable that the flesh of young cattle is seldom affected with 'measles,' simply because they have enjoyed a less number of chances of swallowing the eggs of tapeworms than obtains in the case of full-grown animals. Hence it may be safely concluded, as a general rule, that veal is less liable to harbour 'measles' than beef. Again, considering the possible methods of egg dispersion, it may also be safely asserted that the nearer cattle are reared in the neighbourhood of large towns, the more likely will they be (especially where sewage is freely distributed) to harbour tapeworm larvæ. Thus, also, we are enabled to explain how it is that certain fortunate persons may even persevere in eating underdone meat, and yet escape infection. It all resolves itself into a question of chances—at least, as regards that portion of the community who prefer underdone meat. Those who habitually eat their meat well cooked cannot have been predestined to suffer from the tapeworm malady; rather has it, I presume, been willed that we should exercise our senses and have our meat well cooked, for thus we can avoid those unpleasant contingencies, whose relations I have sought to explain."

We add another quotation regarding the probability of getting tapeworms from mutton:—

"In conclusion, I have one word to say respecting the possibility of getting tapeworms from eating mutton. On this score I no longer entertain any doubt. Some months ago, I called public attention to the fact that I had (on three separate occasions) noticed small hydatid-like cysts in joints of mutton brought to my own table. I mentioned it also, last winter, to my friend Dr Kirk, who assured me he had noticed similar appearances. Subsequently I exhibited specimens of such measles (in a calcified condition) to the Pathological Society, and, still more recently, I have received from Mr Heisch a perfect specimen of an armed cysticercus taken from the interior of a mutton-chop. I believe this measle to represent a distinct form of tapeworm, but whether it will turn out to be my *Tænia lophosoma*, or a species altogether new to helminthologists, is a point which I hope to solve very shortly. Meanwhile, it should be known that even mutton, hitherto supposed to be perfectly innocuous, is liable to harbour larval tapeworms. It may turn out that the adult worm belongs, so to speak, to one of the carnivora. I think this highly probable."

The practical conclusion from all this is, that to avoid tapeworms we should be careful to use none but thoroughly cooked meat.

We can strongly recommend Dr Cobbold's little work (which, by-the-by, contains several good illustrations), not only to the medical profession, but to the public, among whom it is highly important that some knowledge of the frequent occurrence of parasites, and the dangers they occasion, should be diffused.

A Practical Essay on the Use of Nitrate of Silver in the Treatment of Inflammation, Wounds, and Ulcers. By JOHN HIGGINBOTTOM, F.R.S., Honorary Fellow of the Royal College of Surgeons of England. Third Edition, much enlarged, 8vo, pp. 172. John Churchill & Sons, London: 1866.

FORTY years have passed since the first edition of this book was given to the profession; during all this period it has been a standard work of reference on the subject of which it treats. We heartily congratulate its respected author, not only on his long life of usefulness, but also, that he is able after forty years to return to the praises of his favourite remedy, still with the enthusiasm of youth, only strengthened by the experience of a lifetime.

The work is considerably enlarged in this its third edition; from 147 very widely printed pages it has grown into 172, each containing much more material, while the recorded cases, from 36, have become 104.

With all this, there is no redundancy, no mark of age in senile garrulousness; the same solid practical sense, careful observation, and concise description pervade the last as the first edition.

There is not much evidence of changes of practice, none of a belief in change of type. The author bled little in 1820, he does not bleed at all now; but the emetics, aperients, and antiphlogistic regimen, which he believed then to be essential to success in the treatment of inflammation, he holds by still.

The book is one which in this day has a special value, showing, as it does, the success that may attend steady persistence in the use of old and tried remedies if only properly applied, and in suitable cases; the sling and the stone, if wielded by a master, proving more efficacious than a whole armoury of new, unproved, half-understood weapons.

Part Third.

PERISCOPE.

PRACTICE OF MEDICINE.

RULES FOR THE TREATMENT OF EPIDEMIC DIARRHŒA AND CHOLERA. BY GEORGE JOHNSON, M.D.

THE following directions for the treatment of diarrhœa and cholera are given in compliance with the wish, which has frequently been expressed, that I would set forth somewhat more in detail than I have hitherto done what, in my opinion, it is right to do, and what to avoid doing, in the treatment of these diseases. In giving these directions, I shall carefully endeavour to act upon the golden rule which should always guide us in the treatment of disease—*Ne quid nimis.*

Diarrhœa during an epidemic season is in many, but not in all instances, an early stage or a mild form of cholera; and in the great majority of cases of actual cholera, an attack of bilious diarrhœa marks the onset of the disease. A diarrhœa, when it is not the actual beginning of cholera, will weaken the patient, and so may predispose him to suffer from the more serious form of disease. *Diarrhœa, therefore, ought not to be neglected even for an hour.* That plan of treatment for diarrhœa is obviously the best which most speedily and completely puts a stop to the disease, without subsequent ill effects.

It may be stated as a general proposition, that the immediate cause of diarrhœa or looseness of the bowels is the presence of offending materials in the alimentary canal. These offending materials are of various kinds in different classes of cases. In one case, unwholesome and undigested food is the exciting cause of the purging; in another case, a large and unnatural accumulation of the fæculent contents of the bowel; while in another class of cases, offending materials are poured from the blood into the bowel, in consequence of the action of a morbid poison upon some of the ingredients of the blood. To this last class of cases belongs what is called *choleraic diarrhœa.*

The most rational theory of choleraic diarrhœa is, that a morbid poison enters the blood either with the air through the lungs, or with the food and drink through the alimentary canal; and that this poison excites certain changes in the blood, in consequence of which some blood materials are spoiled, and thus rendered not only useless, but noxious. These morbidly changed blood-materials are then discharged from the bloodvessels through the mucous membrane of the stomach and bowels, and are ultimately ejected by vomiting and purging.

Various as are the remote and primary causes of diarrhœa, this one condition is common to all classes of cases; viz., that the contents of the bowel are unnatural and offensive. These offending materials are the immediate cause of the purging; and they must be expelled from the bowel before the diarrhœa can come to an end.[1]

From the above considerations we deduce one important and guiding rule of treatment, which is this,—*not to attempt by opiates, or by other directly repressive means, to arrest a diarrhœa while there is reason to believe that the bowel contains a considerable amount of morbid and offensive materials.* It is certain that these offending materials must be cast out from the bowel before the diarrhœa can permanently cease. The effect of an opiate at this stage is to prolong the disease, and to increase the risk of mischief from the retention and reabsorption of the morbid contents of the bowel. If the opiate have the effect of retaining within the bloodvessels some of the morbidly changed blood-constituents, this astringent action will probably be more injurious and even deadly than the retention of morbid secretions within the bowel.

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[1] We need not here take into consideration those cases of diarrhœa which result from ulceration or other local disease of the bowel itself.

The purging is the natural way of getting rid of the irritant cause. We may *favour* the recovery by directing the patient to drink copiously any simple diluent liquid—water cold or tepid, toast-water, barley-water, or weak tea; and we may often *accelerate* the recovery by sweeping out the alimentary canal by some safe purgative, and then, if necessary, soothing it by an opiate. Castor-oil, notwithstanding its unpleasant taste, is, on the whole, the safest and the best purgative for this purpose. It has the advantage of being very mild and unirritating, yet withal very quick in its action. A tablespoonful of the oil may be taken, floating on cold water or any other simple liquid which may be preferred by the patient. A mixture of orange-juice or of lemon-juice with water forms an agreeable vehicle for the oil. If the dose be vomited, it should be repeated immediately; and the patient should lie still, and take no more liquid for half an hour, by which time the oil will have passed from the stomach into the bowels. Within an hour or two, the oil will usually have acted freely. Then a tablespoonful of brandy may be taken in some thin arrowroot or gruel; and, if there be much feeling of irritation, with a sense of sinking, from five to ten drops of laudanum may be given in cold water. These means will suffice for the speedy cure of most cases of choleraic diarrhœa. If the patient have an insuperable objection to castor-oil, or if the oil cannot be retained on the stomach, ten or fifteen grains of powdered rhubarb, or a tablespoonful of the tincture of rhubarb, or a teaspoonful of Gregory's powder may be substituted for the oil.

If the diarrhœa have continued for some hours, the stools having been copious and liquid; if there be no griping pain in the bowels, no feeling or appearance of distention of the intestines; the abdomen being flaccid and empty, and the tongue clean,—we may conclude that the morbid agent has already purged itself away. There will, therefore, be no need for the castor-oil or other laxative, and we may immediately give the brandy in arrowroot, and the laudanum, as before directed. The rule in all cases is, *not to give the opiate until the morbid poison and its products have for the most part escaped; not to close the door until "the enemy" has been expelled.* While there are some cases in which the evacuant dose is not required even at the commencement of the attack, there are many more in which the opiate is unnecessary in the later stage. In some cases of severe and prolonged diarrhœa, it may be necessary to repeat the oil and the laudanum alternately more than once, at intervals of three or four hours. Practical skill and tact are required to discriminate these cases.

If the diarrhœa be associated with vomiting, this should be encouraged and assisted by copious draughts of tepid water. The vomiting affords relief partly by the stimulus which it gives to the circulation, but mainly by the speedy ejection of morbid secretions.

Thirst may be allayed by drinking cold water, which may be acidulated by the addition of lemon-juice or a few drops of dilute sulphuric acid. *Care should be taken that the water for drinking is pure.* Organic impurities, such as result from the admixture of sewage, are especially to be dreaded. If the water be of doubtful purity, it should be carefully filtered through sand and charcoal and then boiled. Impure water is a common exciting cause of cholera.

While the diarrhœa continues, the diet should consist mainly of rice or arrowroot, gruel or broth.

In all cases of severe diarrhœa, the patient should remain in bed.

If the purging continue, if the stools become colourless and watery (the purging being of the kind commonly called rice-water purging), and if the surface of the body become cold and blue, the disease is now passing, or has actually passed, into the stage of collapse.

This state of choleraic collapse results from a peculiar arrest of the flow of blood through the lungs, occasioned by a morbid poison. It is not a condition of mere exhaustion. It is not relieved by the remedies for exhaustion; and it is made worse by opiates and by spirituous stimulants, which must therefore be avoided. The patient should be strictly kept in the recumbent position; he should be allowed to drink pure water freely; and should be abundantly supplied with fresh air. Hot flannels, or bottles, or bags of sand, should be applied to the feet and legs.

Cramps may be relieved by rubbing the affected parts with the warm hand.

Hot baths, whether of water or of air, have been found to be, on the whole, more distressing and exhausting than beneficial.

Five grains of sesquicarbonate of ammonia, or a teaspoonful of spirit of sal volatile, may be given in an ounce of camphor mixture every two or three hours as a diffusable stimulant.

The discharges from the bowels, and the condition of the abdomen, should be carefully observed. The discharges always continue, more or less, during the stage of collapse and until reaction has set in. One of the earliest and surest signs of reaction is the reappearance of bile in the vomited matters and in the stools. When vomiting and purging entirely cease during the stage of collapse, the disease is nearly always fatal.

One of the main objects of treatment during this stage is to facilitate the escape of the morbid secretions from the alimentary canal. This may be done partly by the copious use of diluent drinks, and partly by an occasional dose of castor-oil. If we carefully observe the condition of a patient in collapse, we shall often find that the intestines are more or less distended with liquid; and this, too, while perhaps there is general torpor and little or no effort at expulsion. Again, it has often been found that, although there has been copious watery purging during life, the small intestines contain after death a large amount of a peculiar viscid dirty white material, having a very offensive odour. An occasional dose of castor-oil—a tablespoonful every three or four hours during the stage of collapse—may be useful in removing both these conditions; namely, over-distention of the bowel by liquid, and accumulation and retention of offensive viscid semi-solid secretions.

The object and the effect of this treatment is not to increase the amount of liquid which is poured from the blood into the stomach and bowels, but simply to assist and to quicken the expulsion of the morbid secretions from the alimentary canal.

After reaction has occurred, an occasional laxative dose is required—about once in the twenty-four hours during the first two or three days.

It is worse than useless to attempt to *feed* a patient during collapse. The secretions of the stomach are utterly deranged; and the power of digestion is suspended. The mildest nourishment administered at this time only adds to the feeling of oppression and general distress, from which the act of vomiting often gives immediate relief.

After reaction has occurred, and when the normal secretions are restored, the mildest nourishment should be given frequently, but in small quantities—such as milk, gruel, or rice, or arrowroot with a small quantity of brandy, soup or beef-tea, or chicken-broth. After an attack of cholera, the stomach is sometimes long in recovering its tone and the power to digest solid food. When this is the case, a grain of quinine, with ten or fifteen drops of dilute hydrochloric or sulphuric acid and an equal quantity of chloric ether, may be taken with each meal. The same combination, too, often relieves that distressing sense of uneasiness, with flatulence in the stomach and bowels, experienced by many persons who are not otherwise ill during an epidemic of cholera.

Venesection has often afforded great relief during the stage of collapse. The symptom which appears especially to call for this remedy is rapid breathing, with a feeling of impending suffocation. When, with these symptoms, there is a cessation of vomiting and purging, which is probably a result of the almost entire arrest of the circulation through the lungs, I believe that venesection affords the only hope of saving life. It is difficult to obtain a stream of blood in these cases; not, as many suppose, because the blood is too thick to flow, but because, in consequence of the block in the lungs, the blood in the veins is nearly stagnant. The bleeding appears to be beneficial, partly by relaxing spasm and partly by lessening the distention of the right cavities of the heart, and so increasing their contractile power. Repeated doses of ammonia may help to quicken the circulation.

Consecutive Fever.—Reaction from collapse is sometimes followed by a febrile condition—a hot skin, quick pulse, coated tongue, hurried breathing, often a scanty secretion or even a complete suppression of urine, with drowsiness tending to pass into coma. These unfavourable symptoms are more common when, during the earlier stages of the disease, opium and alcoholic stimulants have been freely given; but they may occur when no such means have been employed.

The best treatment consists in a scanty diet without alcohol, copious diluent drinks, with saline effervescing draughts, an occasional aperient, castor-oil, or sulphate of magnesia or a Seidlitz powder; counter-irritation over the lungs and kidneys, and sometimes local bleeding to relieve congestion of those organs.

In some cases, there is complaint of pain in the region of the stomach during convalescence. This may be relieved by the application of a few leeches over the seat of pain. If, after reaction, the stomach remain irritable, with frequent vomiting, iced water is an agreeable and efficacious remedy.

Preventive Measures.—The choleraic discharges from the bowels should be looked on as highly poisonous, and they should be disinfected and got rid of as soon as possible. Every vessel and article of clothing or bedding soiled by the discharges should be carefully cleansed and disinfected. The attendants on the sick should be warned of the necessity for extreme personal cleanliness. The hands should be frequently cleansed with the aid of disinfectants, and always immediately before taking food.

The chief disinfectants are—chloride of lime, Burnett's liquid, Condy's liquid, and a solution of carbolic acid. The medical attendant should give directions for the use of these agents. Condy's fluid is well adapted for cleansing the mouth and hands before taking food; and carbolic acid for cleansing bedding and clothing, which would be damaged by mineral disinfectants.

Great moderation both in food and in drink is essential for safety during an epidemic of cholera. A single act of indiscretion has been followed by a severe attack. Intemperance at such a time is fraught with extreme danger.

Unwholesome articles of food, more especially tainted meat and fish and decayed vegetables, are to be carefully avoided. Ripe fruit and fresh vegetables may be taken in moderation with safety and advantage.

Especial attention should be paid to ensure the cleanliness and thorough ventilation of dwelling-houses. All vegetable and animal refuse should be removed as speedily as possible. Care should be taken to prevent the escape of sewer gases into the interior of dwellings.

The purity of the water employed for drinking and cooking should be most carefully provided for. A few drops of Condy's fluid may be used as a test for the purity of water. Organic impurities soon decolorise the fluid; which is not only a test, but also a purifying agent by oxidising the organic impurities.

No unnecessary medicines of any kind should be taken. When opening medicine is required, the mildest should be selected, such as castor-oil or rhubarb. Saline purgatives, such as Glauber's salts and Epsom salts, are objectionable, on account of their tendency to cause profuse watery purging. The common belief that prolonged costiveness should not be interfered with during the prevalence of cholera is an error. An accumulation of offensive materials within the bowel may be itself a source of irritation and of danger. I repeat, however, that *no unnecessary medicine of any kind should be taken, and, as a rule, none without medical advice.—British Medical Journal.*

LICHEN RUBER OF HEBRA. BY DR THOMAS HILLIER.

THE following case presents a good illustration of a rare form of disease, answering most nearly to what is called by Hebra, *Lichen ruber*:—

E. J. G——, a man aged sixty-five years, who has usually enjoyed good health, came under my care in University College Hospital in February 1866. He stated that when about thirty years of age he had a rough scaly patch on the outside of each of his forearms, which remained about a year, and then disappeared. He had usually, when well, a rather harsh skin.

About six weeks before admission, he first noticed that his hands were stiff and difficult to open and shut; there were also cracks at the bottom of the flexures. About the same time, he found that his limbs and trunk became rougher, and in many parts covered with fine white scales; his feet also had become stiff, very dry, and cracked, and the nails of the fingers and toes were much thicker than formerly.

Soon after admission the following notes of his condition were taken:—Patient complains of nothing except the stiffness of his hands and feet, with soreness from the presence of deep cracks. He can with the greatest difficulty make any use of his hands, from the impossibility of closing the fingers upon the palms. There is but little itching. His pulse is of moderate strength, 84 in the minute; his tongue is coated with a white fur, cracked near the middle, and he has a clamminess and sour taste in his mouth; his bowels are regular; his limbs are rather thin.

Description of the skin.—Nearly the whole of his trunk, back and front, was covered with a thin layer of white scales, in places separable without difficulty in fragments about the size of a finger-nail, or smaller; the layer of scales was nowhere thicker than stout writing paper. There is a large collection of scales between the sheets every morning when his bed is made. After taking two warm baths, many of the scales were detached, and the whole front of his trunk, except near the epigastrium, was red and dry, the ridges and furrows of the skin being a little exaggerated. Here and there are small patches of skin of the natural colour; around the margins of these are numerous papules, the size of pins' heads, each surmounted with a fragment of cuticle. It is quite evident that all the scales are produced by the desquamation of such papules, closely aggregated until they coalesce. In many cases, a small sheath of cuticle is seen around a fine hair as it emerges from the follicle. In the right groin there are confluent papules on a reddened surface. In the left groin there is natural skin, dotted with brownish-white desquamating papules. Thighs: On the front is seen a layer of scales, reminding one of slight ichthyosis. This extends over the right knee, and partly over the left; the skin of the legs is in part scaly and in part reddened, with prominent hair follicles, each surrounded with a small fringe of cuticle. Feet: The skin is very hard, thickened, and in places very deeply cracked. The toe-nails are four or five times their usual thickness at the free extremity. It is impossible to cut them with an ordinary pair of scissors. The skin of the arms and forearms is like that of the trunk; below the middle of the forearm are seen a great many hairs, broken off short, surrounded by a white fragment of cuticle. The hands are dry, stiff, hard, and deeply cracked, especially on the knuckles, and to a less degree on the palms. The finger-nails are much thickened, and for some distance back from the free extremity are opaque. The cuticle of the hand is separable near the deep cracks in thick fragments of some size; elsewhere it is adherent to the cutis, as in health. Face free from eruption, except the whiskers and beard, where there is fine desquamation around each hair, as is often seen in tinea tonsurans. Some pityriasis of the eyebrows. External ears harsh, covered with dry scales, especially on the outer aspect and near the meatus. Scalp, on admission, swarmed with pediculi; it is now shaved, and presents an appearance as if covered with a layer of flour and soap allowed to dry on. On closer examination, there are seen abundant fine scales between, and in many cases sheathing, the hairs. He has an unusual crop of hair for his age. The hairs do not appear to be brittle or loosened in the follicles Under the microscope no change is seen, except that a few of them exhibit a fibrous fracture. The scales of cuticle are found to be infiltrated by numerous globular bodies, strongly refracting the light, not soluble in ether or liquor potassæ. They look like vegetable spores, but there is no appearance of filaments of mycelium.

Diagnosis.—At first sight the case reminded one of psoriasis. Closer examination showed that this was not its true nature. Unlike psoriasis, the scaly patches of skin are found to be made up of numerous desquamating papules which run into each other; the papules appear in every case to originate in hair follicles, and do not individually grow to any size, but unite with adjoining papules. There is nowhere, unless it be in the hands and feet, any considerable thickening of the true skin, as is usual in extensive psoriasis. The scales are not so thick as in psoriasis, and are more readily detached. On the removal of the scales there is seen, instead of an elevated piece of skin reddened and smooth, a portion of skin reddened and studded with papules aggregated into clusters. The cuticle of the hands and feet is more thickened than in psoriasis, and the movements of these parts are thereby much impeded. The nails are not so brittle as in psoriasis, but are hard and much hypertrophied. There is little or no itching, which usually exists in psoriasis when the disease is on the increase.

In many respects it is like the pityriasis pilaris of Devergie and Hardy. In their cases, however, there was no degeneration of the nails, and no such thickening and stiffness of the hands as were noted in this case. In all Devergie's cases, the disease made its appearance between the ages of sixteen and eighteen years.

It differs from pityriasis simplex, or rubra, in the following respects: the distinct character of the papules at first, and the condition of the hands and feet and nails.

From eczema lichenoides and the lichen simplex of Willan, it differs in the absence of itching, the consequent absence of excoriation, and the condition of the hands and feet. The papular character is longer maintained, and there is not the same amount of thickening of the true skin.

It resembles lichen pilaris in many respects; this disease is, however, usually accompanied with much itching, and there is no such change in the hands and feet as was seen in this case.

From lichen scrofulosus (Hebra) it differs in the thickening and degeneration of the nails, the stiffness of the hands and feet, the absence of any signs of scrofula, and the advanced age of the patient.

It differs from ichthyosis in the ease with which the scales are detached, the commencement near the hair follicles, the stiffness of the hands and feet, and the state of the nails.

Is the case a syphilide, or in any way dependent on syphilitic infection? I believe not. The patient has an old scar in his groin, the result of a suppurating bubo many years ago. He has never had other symptoms of secondary syphilis, nor enlargement of the posterior cervical glands, sore-throat, bitemporal headache, roseola, or specific squamous disease, preceding this condition of the skin.

At first, however, I treated him with bichloride of mercury. Whilst taking this, his tongue became very brown and his health suffered; there was no improvement in his skin. I subsequently gave him five minims of liquor potassæ arsenitis three times daily; this also disagreed with him, rendering his tongue dry and brown; he also had pains in his limbs. Maceration of the skin with water-dressing and the inunction of oil was found to do him great service. He also took internally the citrate of potash.

By keeping up these measures for two months, the scales were removed from his skin, except on the outer aspect of the forearms, where the skin is slightly red and studded with white scaly papules. In many parts the hair follicles are prominent, and disposed to desquamate on their summits. The hands and feet have thrown off large masses of cuticle; they are still very stiff, hard, and disposed to crack. The nails remain as before. His general health has improved, but his tongue continues white. His appetite is good. His muscular power is moderately good for his age. He is thin, but not emaciated.

The case differs from Hebra's description of lichen ruber in the circumstance of the *scalp* being affected. The prognosis in this case would seem not to be so serious as that given by Hebra, who says that of fourteen cases which have come under his notice only one recovered. The others became progressively worse, emaciating and losing strength; the whole surface of the body, except the scalp, the pubes, and the axillæ, became involved; the hands and feet grew stiff and almost immovable, with deep cracks in the thickened cuticle.

In this case the patient's health has much improved, his skin is much better, and he has gained flesh.—*The Lancet.*

Part Fourth.

MEDICAL NEWS.

VISITATION OF EXAMINATIONS IN SCOTLAND.

As an appendix to the Minutes of the General Council of Medical Education and Registration, published in our last number, we now print the greater part of the Reports of the Visiters of the Examinations of the Universities and other licensing bodies in Scotland, submitted to the Branch Council, and by them laid before the General Council.

Report by Deputation on Examination for Degrees in Medicine in University of Edinburgh.

As deputed by the Scottish Branch of the Medical Council, we visited, on the 17th July 1865, the examinations for the degree of M.D. at the University of Edinburgh.

The Dean of the Medical Faculty gave us all needful information, and placed before us every document which could make clear to us the method of conducting the examination and also of judging in regard to the competency of the candidates.

During our visits several candidates underwent an oral examination on Anatomy, Physiology, and Surgery. The examination on Anatomy was conducted by the Professor of Anatomy, assisted by a non-professorial examiner; that on Physiology by the Professor of the Institutes of Medicine, assisted by a non-professorial examiner; while the Professor of Surgery, assisted by a non-professorial examiner, examined on Surgery.

The examination on Anatomy was largely demonstrative, the candidate being required to show his knowledge on bones, dissections, and wet preparations placed before him. In the course of the examination on Physiology, the candidates were required to explain the nature of preparations of minute structure placed under the microscope. The examination on Surgery was largely illustrated by wet and dry preparations, and morbid specimens illustrative of surgical diseases.

The examiners sat at different tables, each candidate passing in rotation from one to the other, and remaining about twenty minutes at each. Two examiners sat at each table, one putting the questions, the other taking notes of the subjects over which the examination extended.

The method by which the competence of the candidates was estimated is explained in the Schedule to this Report, and we had an opportunity of seeing it fully tested in the course of the examination.

We were also furnished with the questions used in the written examinations on these subjects.

We further received specimens of the written answers selected at random from the three following classes:—

1st, Passed.
2d, Admitted to an oral examination, though written answers not very good.
3d, Rejected on the written examination.

A careful examination of these papers convinced us that the standard laid down was strictly adhered to.

Andrew Wood, M.D.
Alexander Wood, M.D.

Schedule.—Marks to be used for the Exercises and Oral Examinations.

Value.	
100	*B.*—Good, above average. All the questions answered well.
75	*S. B.*—Satisfactory. Two-thirds of the questions answered well.
50	*V. S. B.*—Scarcely satisfactory. One-third of the questions answered well. An oral examination in certain circumstances.
30	*N. S. B.*—Decidedly unsatisfactory. None of the questions answered well, or one entirely omitted. Another written examination on the subject so marked.
0	*M.*—Bad. All the questions answered badly, or more than one omitted. A written examination after another *Annus Medicus* has been completed.

An average of 60 entitles to a pass.

Visitation of the Examination in Chemistry, Botany, and Natural History.

I visited this examination on the 7th April, and found thirty students under examination. The Examination Papers are prepared by the Professors of the subjects stated above, with the assistance of three non-professorial Examiners appointed by the University Court. One day of six hours is allowed for the written examination, and the arrangements are similar to those already detailed in reference to the Preliminary Examination.

The Papers are examined and adjudged on by the Professors and non-professorial Examiners sitting together in council. The marks are similar to those used in the Preliminary Examinations. In doubtful cases the student is generally allowed to go on to an oral examination; but the Examiners at the oral examinations have before them the marks obtained at the written examinations, so that particular attention may be paid to testing the candidate on the subjects where in his written examination he may have seemed deficient. I had the opportunity afforded me in this, as in the preliminary examinations, of perusing a number of the written papers having different marks appended to them, so as to enable me to judge of the data which guide the decision. Of the thirty examined on this occasion, *one* was positively rejected, and *three* were marked *doubtful*, but allowed to go on to an oral. I was informed, however, that this is a more than ordinarily favourable result, as the average number of rejections at this written examination is about one in five.

On the 10th of April, I had the opportunity of being present during part of the oral examinations on Chemistry, Botany, and Natural History.

There were three tables all in the same room, one for Chemistry, at which the Professor of Chemistry sat along with a non-professorial Examiner; one for Botany, at which the Professor of Botany sat with a non-professorial Examiner; and one for Natural History, at which one of the non-professorial Examiners sat alone (the Professor of Natural History being absent on leave in consequence of illness), but in cases of difficulty he had the opportunity of consulting the other Examiners. Each student was examined at each table for a quarter of an hour, and notes were taken of the subjects of examination. The examinations on Botany and Natural History were highly demonstrative, being based on a large collection of models, specimens of plants dried and fresh, skeletons, preparations, etc. At the Botanical table was a row of microscopes with microscopic specimens, which the candidate was asked to explain. The demonstrative part of the Chemical examination, as I was informed, takes place at a separate hour in the chemical laboratory, where the candidate is made to test several chemical solutions, no indication being given him as to the nature of the substances dissolved.

In adjudicating upon the oral examination, the same system is used, as has been already explained, in regard to the other parts of the examination.

A statement of the result of the above examination in Chemistry, Botany, and Natural History, has been furnished to me by the Dean of the Medical Faculty, as follows:—

> *Four* candidates appeared for Botany alone, they having been remitted on that subject in October 1865. They all passed.
>
> *Thirty-one* gave in exercises in Chemistry, Botany, and Natural History. Of these 6 were rejected, and 21 passed.
>
> *Three* of the candidates passed with honours, *i. e.*, they had the mark *B* (Bene) at every examination, both written and oral.

I had the opportunity of being present during part of the oral examination for the examination in Anatomy, Physiology, and Surgery. As a similar examination on the same subjects was reported upon by Dr Alexander Wood and myself last summer (1865), it is unnecessary to go into detail in regard to this examination, which was conducted in exactly a similar manner. The only observation I have to make, in addition, is to state that the Professor of Surgery devotes half-an-hour to testing candidates practically in bandaging, application of splints, etc.

The results of the examination in Anatomy, Physiology, and Surgery, as afforded me by the Dean of the Medical Faculty, are as follows:—

There were examined in the written examination 93 candidates. Of these there were remitted absolutely, 2. There were remitted for another written examination, after a month's interval, 4, viz., in Anatomy 3, in Surgery 1.

There came up for the oral examination 87. Of these, to this date, there have been examined 59, whereof 5 have been remitted for three months.

I regret that it is not in my power to render complete my visitation of the Edinburgh University Medical Degree Examinations in time for the approaching meeting of the General Medical Council, by reporting on the final practical examination in Midwifery, Medical Jurisprudence, Materia Medica, Medicine, and General Pathology, as these examinations do not take place till June. It may, however, be right to show in some degree the nature of these examinations, and this I do by appending the questions on these subjects proposed to candidates at the corresponding examination last year.

ANDREW WOOD, M.D.

Edinburgh, 3d May 1866.

Report by Deputation appointed to visit the Examination for Degrees in Medicine of the University of Glasgow.

On the 25th July 1865, we visited the Examination for Degrees in Medicine at the University of Glasgow. We were furnished with full details of the method of conducting the examinations, both written and oral, as also with copies of the questions used in the written examinations, which we append to this Report. We had the opportunity of perusing various specimens of the written answers, some of them marked good, some marked medium, and some marked bad, and thus we were enabled to judge of the standard which is applied in deciding regarding them. It is not the usual custom to remit candidates on the written answers alone, an opportunity being almost invariably given them of going up for the oral, even though the written answers may be unsatisfactory. The experience of the Examiners, we were told, is that very rarely indeed is the result different; but if the requisite numbers are obtained on the aggregate of the two examinations, a candidate may pass, though his written answers may have been deficient, unless the deficiency has been in regard to a practical subject. We had the opportunity of hearing several candidates examined orally,—the examination on Anatomy being conducted by the Professor of Anatomy, that on Physiology by the Professor of the Institutes of Medicine, that on Materia Medica by the Professor of Materia Medica, that on Surgery by the Professor of Surgery, that on Medicine by the Professor of Medicine, that on Midwifery by the Professor of Midwifery, and that on Medical Jurisprudence by the Professor of Medical Jurisprudence. The Professors sit at separate tables, and each candidate is under examination for about twenty minutes. The examinations on Anatomy and Histology were largely demonstrative, being conducted by means of dissections, preparations, models, etc.; the Materia Medica and the Chemistry examinations were illustrated by specimens. Two non-professorial Examiners, viz., Dr Fleming and Dr Coates, were also present at the examinations, visiting the various tables in succession. We observed, however, that, during a considerable part of each examination, there was no one present excepting the examining Professor and the candidate. We think it would be an improvement were it so arranged that no examination should be conducted unless in the presence of not less than two Professors, or one Professor and one non-professorial Examiner, one of whom should take jottings of the subjects of examination. This would be more satisfactory, both to the Professor and to the candidate. Several of the Professors expressed to us their anxious wish that such an arrangement should be made imperative. We had opportunities of seeing in operation the method of judging of the answers of candidates, as well in the written as in the oral examinations. We give a table of the terms used in judging, and the numerical signification attached to these terms:—

Optime	= 10	Bene	= 6	Vix Satis Bene	= 2
Admodum Bene	= 8	Satis Bene	= 4	Pessime	= 0

Unless a candidate gain the value of 20 on the whole subjects, he is not allowed to pass. From the specimens we saw we are satisfied that the standard is strictly adhered to.

In Medicine, each candidate is also examined clinically in the Hospital, having to give a report on a case of disease, to show his ability to examine urine, to employ the ordinary means of physical diagnosis, and generally to show his aptitude in other miscellaneous details of daily practice.

We had not an opportunity of seeing this carried out, but the Professor of Medicine has explained to us the method which is followed.

R. Christison. Alexander Wood.
Andrew Wood. James Syme.

Report by Deputation appointed to visit the Examination for Degrees in the University of Aberdeen.

Edinburgh, August 1865.

As commissioned by the Scottish Branch of the General Council of Medical Education and Registration, we proceeded, on the 27th August 1865, to inspect the Examinations for the Medical Degrees of the University of Aberdeen. Dr Fleming, who was associated with us in the work, was unavoidably prevented from attending.

The written examinations were over before our arrival; ample opportunity, however, was given us of becoming acquainted with the manner in which they are conducted.

Formerly, in Aberdeen, the candidates sat round long tables in the common hall, as is still done in the written examinations of some Boards. Now, however, the long tables have been discarded, and each candidate occupies a seat at a small table reserved for his exclusive use. This, we were informed, is found in practice greatly to lighten the labour of the superintendent of the written examination, and also to render it difficult for candidates to obtain assistance surreptitiously.

By the Dean of the Medical Faculty of the University we were furnished with a complete set of the printed questions which had been placed before the candidates at the April and July written examinations.

In the written examinations, three hours are allowed for each of the nine subjects.

The oral examination at which we were present was the first professional only. It commenced at three P.M., and lasted until five, recommenced at six, and terminated at eight.

It was conducted at tables, one being devoted to each subject, two and often more examiners being present at each table. Each candidate was on an average examined for about fifteen minutes on Botany, Chemistry, and Materia Medica, and for about twenty minutes on the other subjects.

It is a rule with the Medical Faculty that, when a candidate has got the mark of "*optime*" on all the subjects of the written examination, he is not subjected to an oral examination at all. It occurred to us to see two candidates exempted in this way. No one who has had much practice in examining can fail to be struck with the disparity between the written and oral examination of the same candidate in not a few cases, one circumstance amongst others which seems to us to render it desirable that both methods of testing the acquirements of candidates should in every case be employed. We feel it right to call attention to this subject as one deserving of special consideration.

One peculiarity in the distribution of the subjects for the first and second professional examination struck us very forcibly. In Aberdeen, Materia Medica is included in the list of subjects for the first examination, coming thus at an earlier period than the examination on Practice of Medicine and Surgery. It is evident that by this arrangement the examination must necessarily be confined to the natural history and elementary chemistry of drugs; and that no examination on therapeutics can take place, and that, consequently, unless this deficiency be supplemented by the Professors of Medicine and Surgery at the second examination, the student's knowledge of this important department of his profession will never be tested by examination at all. We found, on inquiry, that this arrangement was ordered by an ordinance of the University Commissioners, and is much objected to by the present Professor of Materia Medica.

Each student at Aberdeen presenting himself for examination receives a card, on which are printed in order the several subjects of examination, and as he leaves the table the professor who has examined him initials the subject on which he has examined.

Although at least two examiners are present at each table, we did not observe that any minute was kept of the subjects on which each candidate was examined, as is done in the examinations in the University of Edinburgh, and might, we think, with advantage be carried out in the examinations of all Boards.

The examinations were largely demonstrative. Each professor was liberally supplied with objects relating to his special department, which the student was required to illustrate and explain.

The Medical Faculty of the University of Aberdeen have bestowed much attention on the subject of the marks given to candidates, in order to determine their position in the pass list. They attach great importance to the system of "merits" and "honours," finding that it stimulates students to diligent and accurate study, and affords the holders of such honourable certificates a ready passport to situations in England or elsewhere.

We were present at the meeting of the Professors held at the conclusion of the examinations for the purpose of deciding upon the merits of the candidates. Each professor gave his report on his own subject, and then the deduction as to the position of the candidates was made from a very careful consideration of the whole, a certain general minimum being required to be attained before a candidate can pass.

ALEXANDER WOOD, M.D.
ANDREW WOOD, M.D.

Reports on Visitation to the Examination for the Diploma of the Royal College of Surgeons of Edinburgh, and to the Examination for the Double Qualification granted by the Royal Colleges of Physicians and of Surgeons of Edinburgh.

On 6th April 1866, we were present at the second professional examination of five candidates for the Diploma of the Royal College of Surgeons of Edinburgh. The written examination had taken place on the preceding day.

We were informed that four hours are allowed to candidates to answer such questions. A committee of the Examiners had met and reported on the answers, by attaching a numerical estimate to each; the number adopted to indicate the highest degree of excellence on each subject being 100, graduating downwards from this number, according to the merit of the answers. We were also informed that, as a general rule, no student is passed with a lower number than 50 having been attained for each subject, both written and oral. The written answers were submitted to us, and the numbers attached to those which we examined appeared a fair and just index of their worth.

We heard all the candidates submitted to oral examination, conducted thus: Six Examiners were present. There were three tables, two Examiners sitting at each. The examinations on Surgery and Surgical Anatomy were carried on at one table, on Practice of Medicine and Materia Medica at another, and on Midwifery and Forensic Medicine at the third. Half an hour was occupied at each table, so that each candidate was under examination for about an hour and a half. On the different tables were numerous preparations and specimens illustrative of the respective subjects; on these the student was often required to demonstrate his acquaintance with the particular points on which he was being examined. The two gentlemen conducting the examinations at each table seemed to act alternately. In this examination the same numerical system of estimating the proficiency of the candidate was followed as in the written.

ALLEN THOMSON.
J. G. FLEMING.

Visitation of the Examination for the Diploma of the Faculty of Physicians and Surgeons of Glasgow, and of the Examination for the Double Qualification granted by the Royal College of Physicians of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow.

On 15th July 1865, we visited the examinations carried on in the Hall of the Faculty of Physicians and Surgeons of Glasgow. At that time there was only one candidate under trial, and his examination was a special one, which did not give a correct idea of the system generally pursued.

On the 18th of April last, we again went to Glasgow as visiters of examinations, and found several candidates undergoing trial in the Hall of the Faculty of Physicians and Surgeons by a conjunct examining Board, consisting of Fellows of the Faculty and Fellows of the Royal College of Physicians of Edinburgh, for the "Double Qualification." On this occasion we were informed of the mode of procedure of the Examiners, inspected the written answers given the same forenoon by candidates to written questions, heard for an hour the oral examinations, and were present at the final decision by the Examiners as to the qualifications of the candidates.

Each candidate is required to answer in writing a set of questions on each subject of examination. On some subjects three questions, on others two, are put, of the former of which the candidate must answer any two, and of the latter one. It is not the practice of the Faculty of Physicians and Surgeons to pass judgment on the written examinations separately, or as a necessary step to the oral examination.

The oral examination is carried on at several contiguous tables, at each of which are placed at least two, and generally three, Examiners, when the Edinburgh College of Physicians concur in the examination. There is no limit fixed for the time that any part, or the whole, of the oral examination shall last. But we are informed that each candidate is under trial for at least an hour, and sometimes for two hours. On the tables there were anatomical and surgical preparations, and specimens of various medicines, which were used in conducting the examinations.

The written examination of every candidate is carried on during the early forenoon of the same day in which his oral examination is afterwards held.

The decision is founded on the written and oral examinations conjunctly. Hitherto the Faculty have been in the custom of relying more on the oral than on the written examination as a test of the qualifications of the candidate. The method of arriving at a decision is as follows:—To the written and oral answers, separately from one another, is attached under each subject, the numerical value 10, as representing perfect answers. The Examiners on each subject attach the number which they consider to represent the relative value of the answers; and if the candidate do not receive so high a number as four on any subject, he may be remitted to his studies. Should he be found worthy of a higher number on one or more subjects, this superiority may be held to compensate for inferiority on another, provided that inferiority be not too sensibly great on Anatomy, Surgery, Practice of Medicine, or Midwifery. But the sum of his numbers on all subjects must in all cases be equivalent to four on each; for example, to twenty, if the subjects of examination be five. A decidedly favourable oral examination may qualify a decision, which might have been unfavourable had it gone on the written examination only.

There are two such examinations, one on the fundamental sciences of Medicine, and one on the practical branches, held on separate days.

We witnessed only the later examination, viz., on Materia Medica, Surgery, Medicine, Midwifery, and Medical Jurisprudence.

As we have not witnessed the junior examination, nor the final examination, except as carried on by the conjunct board of the Glasgow Faculty and Edinburgh College of Physicians, we consider it inexpedient to go into more details until we shall have the whole system of examination before us.

ROBERT CHRISTISON.
JAMES SYME.

CORRESPONDENCE.

MEDICAL REFORM.

(To the Editor of the Edinburgh Medical Journal.)

SIR,—I beg leave to call attention to a mistaken feeling, which prevails pretty generally throughout the ranks of the medical profession, respecting the supposed right of all registered practitioners to *prescribe* and *dispense* medicine for *gain* in England and Wales.

A knowledge of the fact that the Apothecaries' Act of 1815 is still unrepealed, will echo coldly throughout Scotland and Ireland; and that its provisions may be enforced against all graduates and licentiates who practise as apothecaries in England, minus the "*Blackfriars' Certificate*," is a consideration as humiliating to science as it is dishonourable to the law-makers of this country.

Comprehensive medical reform is a work yet to be accomplished. Recent legislation has failed in emancipating the licentiates of Scotch and Irish corporations from exposure to the pains and penalties of the Apothecaries' Act of 1815; and unless its victims are practically alive to their own interests, the forthcoming amended Bill will not lessen the risk of fine and imprisonment, to which a large proportion of surgeons are liable under the present state of the law. The insulting prosecutions formerly instituted by the Worshipful Society of Apothecaries against the holders of Scotch qualifications very properly awakened an application to the legislature for redress; and considerable interest was then manifested in the question of Medical Reform by both Houses of Parliament, which culminated in the Medical Act of 1858. I regret, however, to state, that even this measure has afforded no real protection to Scotch licentiates in the full exercise of their profession south of the Tweed. Reformers are therefore again called upon to unite in rescuing a large number of their brethren from the provisions of the Apothecaries' Act of 1815. This Act passed the House of Commons by a majority of *one* vote; and ever since it became an effective measure, its immolating powers have been directed mainly against gentlemen in possession of Edinburgh and Glasgow diplomas practising as apothecaries in England; whilst druggists may *give* advice and dispense medicine with impunity, as the following extract from a letter written by the Company's present solicitor will show:—"I am not aware that the chemist and druggist offends against any provision of the law by giving his advice gratuitously any more than any other private individual, and if a chemist and druggist *really* and *bona fide* makes his patient a present of his advice, and only receives a reasonable price for his medicine, I know of no law to prevent him from so doing."

In the year 1834, I had occasion to memorialize the House of Lords and the House of Commons upon the alleged oppressiveness of the Apothecaries' Act. This step led to the appointment of Mr Warburton's committee of inquiry on the subject. Eventually, several bills were introduced into Parliament, with a view to exempt the holders of Scotch and Irish qualifications from the control of the London Apothecaries Company; but, strange to say, every measure in any way limiting the authority of the society was duly ignored, by virtue of its superior influence with the Government.

Ultimately, a weary compromise was effected, and the Bill of 1858 in due time received the sanction of the legislature. This Bill left the Act of 1815 unassailed in any of its clauses, and the Company in full possession of its powers to fine, imprison, and torment medical men "according to law." Indeed, the aid of the press has often been needed to deter the trading authorities of "Rhubarb Hall" from carrying their threats of prosecution into effect. £67 of legal expenses has been known to be incurred by one surgeon before he could free himself from the bonds of this Babylon; and interested opponents are seldom idle in publishing a want of qualification in their successful rivals, which usually leads to a loss of practice, and then he is received into good society with as much mistrust as a bishop would be admitted to a seat in the *General Assembly* of the Church of Scotland! The recent Medical Act is a considerable failure, and a complete surrender of the original design of the Reform movement, which contended for the repeal of certain clauses of the Apothecaries' Act, affecting the holders of Scotch and Irish qualifications.

I grant that the curriculum of the Apothecaries' Company is unobjectionable, and, should it flourish as a qualifying corporation only, its power, at least for evil, in preventing the recovery of charges in a court of law, would be happily abolished. At present, the Company possess no optional power of prosecution; for a mandamus from the Court of Queen's Bench will compel the Master and Wardens to take proceedings against persons infringing the Act. The late Mr E. Bacot, solicitor to the Hall, declared that he would not hesitate to prosecute any man acting as an apothecary in England contrary to law, even although he held every diploma in Europe. Alas! poor Bacot paid the debt of nature suddenly, after issuing execution against a surgeon for £35. In a second action against the same individual,—his successor was more reasonable, in remitting four penalties, £80, on agreeing to pass an examination, and to pay the costs.

This is a specimen of the doings of the "Blackfriars fraternity;" and unless their sting is extracted by the forthcoming bill, registration will form but a slender protection to the rights of the profession. Mr Denham, of South Shields, L.F.P. & S.G., lately sued a patient in the County Court for a medical bill; and the Judge hesitated for eight months before venturing upon a verdict, in consequence of the Apothecaries' Act being unrepealed. This is certainly a convenience to a patient, whose softening is manifested by dishonesty. The Medical Council has already extracted £50,000 from the pockets of the profession, without supplying a fair equivalent for the impost. They have now produced an amended Bill, the drift of which is to secure compulsory registration. Without compulsory registration, the Council will soon realize a "dead lock," and unpaid representatives will be slow in taking their seats at the London "May meetings." I trust that meetings will shortly be held through Scotland and Ireland, and by those surgeons in England who are aggrieved by the Act of 1815, for the purpose of offering due opposition to any amended Bill which does not embody a repeal of the penal clauses of this Act; and the removal of all restrictions to a free exercise of the healing art by registered practitioners.

Conscientious men will not consent to break the laws of the land, even under the sufferance of the Honourable Society of Apothecaries. This question, as affecting the members of the London College of Surgeons, seems to be somewhat peculiar. As an educational test, the diploma of the London College is inferior to that which is granted by the Scotch corporations. The London College claims no authority to examine in Chemistry, Materia Medica, Medical Jurisprudence, Botany, or Midwifery; whilst the Scotch Boards comprise those subjects in their examination ordeals. The members of the London College have but little cause for complaint, seeing that they require the *complimentary* license of the College of Physicians, or the *legal* certificate of the Apothecaries' Company, to constitute a reasonable qualification to practise anywhere. Trusting that this important subject will receive the support of the press generally, I close my remarks, in confidence that Medical Reform is still progressive.—I am, Sir, yours, etc., ANDREW ALLISON, M.D.

BRIDLINGTON, *July* 1866.

ARMY MEDICAL SERVICE.

(*To the Editor of the Edinburgh Medical Journal.*)

SIR,—His Royal Highness the Duke of Cambridge, with the silent consent of the Director-General of the Army Medical Department, has finally decided that the present condition of the Army Medical Officers must remain unaltered, and has completely ignored the just recommendations of a mixed and unprejudiced Committee detailed by Government to inquire into our many grievances.

This denial of equity is entirely owing to the fact, that at the last half-yearly examination at the Army Board there were a sufficient number of candidates (chiefly Irish) to fill the vacant appointments; and who, by so acting, have effectually crushed for the present all the efforts and hopes of the many who have laboured for years to advance the unenviable status of the Army and Naval branch of our profession.

Should a similar influx of candidates take place at the next examination appointed to be held at Whitehall Yard on the 8th August 1866, there is *no manner of doubt*—and it is a solemn and serious reality—that all our prospects of *genuine* rank, social position, promotion, pay, and retirement are for ever doomed.

This appeal is therefore forwarded to every Medical School in the United Kingdom, calling upon the professors as well as students, for the sake of justice and the honour of our profession, to desist from permanently degrading the entire of your Army and Navy brethren, by ceasing to supply medical candidates for the vacancies of the Army and Navy at the next and future examinations, until the rights accorded us by the late Commission are duly approved of by the Horse Guards and the Admiralty, and *ensured* to us by Government.

Amongst the Parliamentary documents issued during the last session is a return to the House of Commons of the number of assistant-surgeons at present in her Majesty's service, exclusive of the Indian Army; and of the number of assistant-surgeons promoted to the rank of surgeon during the last three years, specifying the number in each year. The return is very brief, but highly instructive. We quote it in its very words:—

"Return showing number of assistant-surgeons at present in her Majesty's service, exclusive of the Indian army," 738

"Return showing number of assistant-surgeons promoted to the rank of surgeon, during the last three years:

"Year ending 31st March 1863," 16
"Year ending 31st March 1864," 19
"Year ending 31st March 1865," 20

"The average annual rate of promotion for these three years is simply 18, which 'goes into' 738 just 41 times; so that the last appointed assistant-surgeon in her Majesty's service has the just expectation of being promoted at the end of *forty-one years*." (*Vide Lancet*, September 30, 1865, page 381.)

This is the present prospect there is of *promotion* to army assistant-surgeons —the rank of all in both the Army and Navy is "nominal" not "relative:"— We can retire on pension only after a full service of 25 years, and during that period self-respect too frequently dwindles away, and gradually succumbs to a process of perpetual "snubbing;" and for the sake of peace and years hard spent in every climate we have almost to barter all the feelings of gentlemen, and often endeavour to forget the dignity due to ourselves, and our profession. —Yours truly, One of the Above.

THE CHOLERA AT LIVERPOOL.

Great heat began about the 20th of June, and continued till the end of the month. But on July 1, and daily to the 6th of the month, refreshing rains, amounting frequently in force to heavy showers, cooled the atmosphere and cleansed effectually the streets and drains. There was indeed less thunder and lightning, and less visible alteration of the electrical condition of the air, than usually accompanies a sudden decrease of temperature during the summer solstice; but still the change was pleasant and hopeful. No case of contagious cholera had been hitherto recorded. It is true that from May 28, when the *Helvetia* and her emigrants finally left our shores, no week's registry of deaths, with the exception of the two weeks ending the 2d and 23d of June, had been without a case of cholera; yet careful inquiry had satisfied the Medical Officer of Health that they were of the bilious type, or so purely sporadic as neither to be due to contagion nor to have spread the virus in the families or neighbourhood of the deceased. Indeed, in each of the other three weeks ending on the 9th, the 16th, and the 30th of June, the number of cholera deaths never exceeded one. Had the hot days of June, by intensifying the conditions favourable to the development and propagation of the poison, at length produced the anticipated result, and caused the commencement of an epidemic? This important question was too soon answered in the affirmative.

Although, according to the Medical Officer's reports, we find that during the week ending June 30 there had been registered only one case of cholera, yet in the week terminating July 7 there were recorded four cases, of which one, a woman, at No. 2 Court, Bispham Street, was entitled "British cholera."

It has been the laudable custom of the local Registrars to convey to the authorities immediate information of any case which, in their opinion, demands special attention; and hence steps are invariably taken, as far as possible, to hurry on the burial of the corpse; to burn the bed, if of straw, and, if of more valuable material, to subject it and the bedding to the purification of dry heat; and, finally, to fumigate the premises with chlorine gas. In the instance of the death at No. 2 Bispham Street, an insuperable difficulty occurred. The woman, Mrs Boyle, died on Sunday, July 1, and the family not only refused to have the body buried by the relieving officer, but also elected to keep it in the same room in which some five or six persons must of necessity live and have their meals during the day. But this was not the total evil; for the orgies of the wake, embracing the co-operation of scores of persons, were maintained day and night. The Court contains three straight-up-and-down houses, so fearfully confined and unfit for safe habitation that the grand jury had, under the provisions of a local act, ordered its demolition in July 1865, and there only awaited some legal or other formalities to have the order carried into effect. These three houses during the wake were crowded with drunken men and women, while drunken women squatted on the flags before the door of the room where the coronach was performed. It was a big heathenish carousal in the presence of death. As might have been expected, the dread pestilence accepted the challenge to the contest. On the 6th, a girl, aged 13, who had been a visiter at the house, died at No. 37 Sawney Pope Street, of cholera, and on the 10th "John Boyle," the husband of the woman, died of the same disease in No. 2 Court, Bispham Street, where, in the next house, there occurred on the same day the death of a child from choleraic diarrhœa.

Immediately after death the body of the man was removed; yet such is the rascally stupidity of these people, that before nine o'clock the next morning, when an officer of the Health Committee went to disinfect the house and effects, the feather bed on which the body had laid was sold to a secondhand furniture-dealer, and before it could be traced by the officer had been unpicked in the establishment of a feather-cleaner.

Since the 3d of July I have heard of 14 deaths in Bispham Street and its neighbourhood, and, though without positive proof, I have no doubt in my own mind that all the victims were participators in the unholy rites of Mrs Boyle's funereal orgies.

By a curious coincidence, the family in which the next independent centre of infection appeared was also called Boyle, though neither relations nor acquaintances of the people in Bispham Street, which is at some distance from No. 5 Court, Raymond Street, their place of residence. Two of their children died on the 7th of July, and the father was removed, ill of the disease, to the Workhouse Hospital. In No. 1 Court of the same street a child also died of cholera.

The foundling wards of the Workhouse are large airy rooms in a separate and detached building of that institution. During the treatment of the patients from the "Bank Hall Depôt"—emigrants from the *Helvetia*—a child who had been in contact with them was removed to a room in this building. The child was well at the time, and never afterwards suffered from the disease; but a nurse and one of the foundlings were attacked with cholera a few days subsequent to the arrival of the emigrant child in the building. No other cases occurred in that department of the establishment at that time, nor, after the fullest investigation, could any absolute contact be traced between the new comer in one ward and the foundlings or their nurses in another.

On the 12th inst., fifty days from the period of the above occurrence, four foundlings and a nurse were attacked with cholera in the same ward in which the cases had happened in May. The nurse had not left the institution for many days, nor had she had any direct communication with persons outside the building; so, however we may reason about general causation, it seems difficult to understand the mode of the peculiar localisation of the disease in this instance. The foundlings are, as a class, puny and sickly infants struggling for hard life; and though, as far as I could observe, the attention paid to their wants and the whole arrangements of their keeping and residence are very excellent, yet we must not be astonished to find that the ravages of cholera among them will prove very great, since the ordinary rate of their mortality from atrophy, weakness, and the usual infantine diseases exceeds 50 per cent. Already ten of them have succumbed to the disease.

There have also occurred in the cholera wards of the Workhouse Hospital several deaths of persons from different parts of the town; but hitherto the most numerous cases are, when discovered, too far advanced in the stage of collapse to admit of removal from their homes.

It will always happen that at the commencement and during the continuance of an epidemic of cholera there will be many sudden deaths where no medical man has seen the patients, but where the slightest professional experience would enable a physician, from the external appearance of the corpse, the nature of the dejections, and the history of the symptoms, to determine at once whether the cause of death was cholera. Now, when we find, as during the week ending July 14, that in no less than three instances juries were empanelled to view bodies dead of cholera, it becomes a question whether such unnecessary detention of a corpse and consequent risk of spreading contagion does not add another to the many reasons why all coroners should be of the medical profession.

It affords me great satisfaction to state that the Health Committee of the Council, the Select Vestry of the parish, and the guardians of the out townships are working admirably in their several duties to meet the exigencies of this trying time. On Friday last, the 13th inst., deputies from these several bodies met Mr William Rathbone, jun., a worthy son of a venerable father long zealous in good works; and, under the presidency of the Mayor, arranged for the adoption of a united system of skilful nurses. Mr Rathbone, as chairman of the existing Nurses' Training Institution, undertakes to find the nurses, and to arrange them according to their fitness and experience, the parochial authorities covenanting to pay all the expenses. The Select Vestry has already mapped out the districts of the parish where cholera has appeared, and will at once institute a careful house-to-house visitation by medical men. They are also erecting cholera sheds in open spaces near the affected localities, and opening dispensaries for the gratuitous supply of medicine and medical comforts. They retain the Bank-hall warehouses as a sanatorium. In fact, they are acting liberally, in a right spirit, and in perfect accordance with the requirements of the Diseases Prevention Act, which the Mayor on Friday, the 13th inst., requested the Government at once to enforce.—*Correspondent of Medical Times and Gazette, July* 21.

CHOLERA IN THE LONDON HOSPITALS.

UNFORTUNATELY there can now be no doubt that Epidemic Cholera has appeared in London. Last week our Hospital reporter supplied us with the particulars of the case of one patient who died in the London Hospital. We regret to be obliged now to report that since her death thirteen other cases have been admitted, and that altogether there have been five deaths, and of those under treatment several were in a precarious state at two p.m. to-day (Thursday), We hear also from this source that there have been several fatal cases in the neighbourhood of the Hospital. A large ward has been set apart for the reception of cases, and it is filling pretty fast. Very prompt measures have been taken to ensure careful treatment and attention to each case. Many extra nurses have been appointed, and in addition to the present resident Medical staff two other Medical men have been appointed. We regret to have to report that one of the nurses, a young active woman, who had been very assiduous in her attention to the cholera patients, was seized with diarrhœa and other symptoms of the disease early this morning; but our reporter was informed this afternoon at two p.m. that she was doing well. One patient was brought in dead. Our Hospital reporter has also made special inquiries at the other large Hospitals. No case had been admitted into University College Hospital on Wednesday afternoon, and none into St George's or the Westminster on Thursday morning. A drover died of cholera in St Bartholomew's Hospital on Monday, and a second case was admitted into that Hospital this morning.—*Medical Times and Gazette, July* 21.

OBITUARY.

DR DAVID CRAIGIE.

By the death of Dr Craigie, recorded in the June number of this Journal, the College of Physicians of Edinburgh lost one of its oldest and most learned Fellows. Dr Craigie was an example of a class of physicians at one time not uncommon, but now becoming every day more rare. He was an excellent classical scholar; he was familiar with several modern languages; and he was deeply read in the literature of the medical profession. Not that he had lived the life of a recluse, or devoted himself exclusively to the study of books; he had acquired his knowledge under considerable difficulties; he had followed an active career; he had been engaged in private practice, as well as acted as physician to a large hospital; he had taught more than one branch of medical science; and for more than twenty years he had conducted unaided what was undoubtedly the most important periodical medical publication of the day.

David Craigie was born in the parish of North Leith, on the 6th of June 1793. He received his early education in his native place, and at the age of sixteen became a student in the University of Edinburgh. He had already made great progress for his years both in Greek and Latin, and soon attracted the favourable notice of the professors in the University. His parents were in humble circumstances, and during the whole of his college career Craigie maintained and educated himself by his exertions in private teaching. Notwithstanding this, and notwithstanding the enthusiasm with which he entered on the preparation for an arduous profession, Craigie continued to pursue his philological studies. He was not only an excellent Latin and Greek scholar, but he studied with success several Eastern languages, especially Hebrew and Persian. It was only when increasing calls upon his time made it absolutely necessary, that he abandoned, and with regret, his Eastern studies.

Dr Craigie graduated in Edinburgh in 1816; the subject of his inaugural dissertation was "De Vita Animali." About this time, or shortly afterwards, he became one of the Resident Physicians in the Royal Infirmary of Edinburgh; and in 1817 he had a most severe attack of typhus, from which he very nearly died. It may here be mentioned, that both of his parents died of malignant disease; all his brothers and sisters died of consumption; and Craigie himself, in early life, had twice serious threatenings of consumption. At the period of life to which we are at present alluding his health was good, and though slenderly built he was of a wiry frame. He took considerable pride in joining in the athletic exercises of some of his more robust companions, but we are not aware that he ever particularly distinguished himself. On one occasion he "backed" himself to walk a mile in ten minutes. The distance selected was between the first and second milestones on the high-road between Edinburgh and Portobello. Craigie lost his match by fifteen seconds, but maintained with characteristic steadiness that he was still equal to the feat, and that he had only lost in consequence of the inequalities of the road.

In 1818, Dr Craigie was elected a Member, and in 1819, one of the Presidents of the Royal Medical Society. The subject of his dissertation (for every member of the Society is required to read a dissertation) was, "The Pathological Anatomy of the Human Brain and its Membranes." The paper was read on the 16th February 1820, and was published in the Edinburgh Medical and Surgical Journal.

At this time Dr Craigie was engaged in teaching Anatomy, and in working at the medical practice of the Royal Public Dispensary. In 1820, he formed a connexion which exerted a very important influence on his future career. The Edinburgh Medical and Surgical Journal was founded by Dr Andrew Duncan in 1805. From that time till 1820 he performed all the editorial duties connected with the Journal. On his appointment to the chair of Materia Medica, in 1820, he engaged Dr Christison (the present distinguished professor) and Dr Craigie to co-operate with him; and with their assistance the Journal was conducted for the next seven years. In 1827, Dr Duncan ceased to have any connexion with the Journal, which accordingly passed into the hands of Drs Christison and Craigie. This joint editorship continued till 1832, when, upon Dr Christison's appointment to the chair of Materia Medica, he retired from the editorial chair, and Dr Craigie remained as sole proprietor and editor. For more than twenty years Dr Craigie retained the management of the Journal exclusively in his own hands. During this period he communicated to it many papers on a great variety of subjects, and a very large proportion of the reviews and critical analyses were written by himself. There were many distinguished contributors to the Journal, and few periodicals have been the medium of laying so much important matter before the medical profession.

In 1832, Dr Craigie was elected a Fellow of the Royal College of Physicians of Edinburgh; he was elected Secretary to the College in 1836, and was annually re-elected for the succeeding twelve years, but was compelled by ill health to resign the office in 1848. Dr Craigie's immediate object in joining the College was to qualify him to hold the position of Physician to the Royal Infirmary, as by the charter of that institution the Physicians must be elected from among the Fellows of the College. Dr James Gregory, one of the Physicians to the Infirmary, died of fever in 1832, and early in 1833 Dr Craigie was elected Physician in his place. Previously to this, Dr Craigie had lectured upon the Practice of Medicine; he now, in addition, began to teach Clinical Medicine. For many years the professors in the University had lectured on Clinical Medicine, but it was not till 1831 that the ordinary physicians to the Infirmary instituted such a course. For this addition to its teaching capabilities the Infirmary is indebted to Dr Christison, who, in conjunction with Dr James Gregory, founded this course in 1831. At this time Dr Christison filled the chair of Medical Jurisprudence in the University of Edinburgh, to which he had been appointed in 1822; but he was not a member of the Medical Faculty, and consequently could take no part in the University Clinical Course. The course of Clinical Medicine by the ordinary physicians was not long carried on by its founders; for, in 1832, Dr Gregory died, and in the same year Dr Christison was elected Professor of Materia Medica and Medicine, and of course became one of the Clinical Professors. Dr Craigie carried on his courses of Practice of Medicine and of Clinical Medicine with much success. In 1833, and for several subsequent years, he published Clinical Reports of the cases which had been under his care: these Reports contain much valuable information.

In 1845, Dr Craigie was compelled by the state of his health to give up a portion of his active duties. He had suffered from rheumatic gout, which fixed itself in his knees, and made going about at first painful and difficult, latterly impossible. On the 6th of April 1846, Dr Craigie resigned the Physicianship to the Royal Infirmary; but at the next weekly meeting of the Board, the

Managers appointed him Honorary Consulting Physician, as a testimony of their appreciation of his distinguished services. For a number of years his connexion with the Infirmary ceased, but was renewed in 1861, when he was elected a Manager. He continued to perform the duties of a Manager with the most painstaking conscientiousness until within a few months of his death.

For a number of years from 1846, Dr Craigie was quite laid aside from active life. He continued, however, to edit the Medical and Surgical Journal. The circulation of this periodical latterly fell off considerably,—no doubt very much owing to the circumstance, that three months was felt to be too long an interval between successive publications. "The Monthly Journal of Medicine," also established by Dr Cormack in 1841, had proved very successful. Accordingly, in 1853, Dr Craigie gave up his interest in the Medical and Surgical Journal, which, during the next two years, was carried on under the editorship of Dr Seller. In 1855, the Edinburgh Medical and Surgical Journal and the Monthly Journal of Medicine were combined, and now constitute the present Journal.

Dr Craigie's health gradually improved, and he became able to go about again. Accordingly, in November 1858, his name was replaced on the roll of attending Fellows of the Royal College of Physicians, and from that period till shortly before his death he was most regular in his attendance. In 1859, he was appointed one of the Examiners of the College, and performed his duties with remarkable zeal. He thoroughly enjoyed examining, and although his manner rather alarmed candidates, his natural straightforwardness made his examinations of the fairest character, though his natural kindliness of disposition would rather have inclined him to err on the side of laxity than on that of severity. On several occasions Dr Craigie also acted as one of the Examiners in Medicine at the University of St Andrews. Till 1863, St Andrews was what might be called an open University; but at that time the Ordinances of the Universities Commissioners came into force, and the facilities for medical graduation were much restricted. Consequently a very large number of candidates presented themselves towards the end of 1862, and the number of graduates was counted by hundreds. During this period, when the faculties, both physical and mental, of the Examiners were taxed to the utmost, Dr Craigie went steadily on apparently incapable of fatigue. Many men of half his age were far more knocked up than the frail-looking septuagenarian.

In December 1861, Dr Craigie received the well-deserved honour of being elected President of the Royal College of Physicians, and filled the chair for the next two years to the entire satisfaction of the College. On the 12th of October 1863, the College entertained at dinner a large number of the most distinguished members of the Social Science Association, the meeting of which body took place that year in Edinburgh. Dr Craigie filled the chair on the occasion. Among the guests were His Royal Highness Prince Alfred, Lord Brougham, the Chancellor of the Exchequer, and many other celebrities.

Dr Craigie's health continued pretty good till about a year before his death. At that time he took a journey to Devonshire, and returned much fatigued, having travelled the whole way without any intermediate stoppage. He looked wretchedly ill on his return to Edinburgh, and his friends were seriously afraid that he would not rally. He partially recovered, however, and was able to go about nearly as usual until about the end of the year. He last appeared s an Examiner of the College on the 5th of January. Symptoms of kidney ease now unequivocally showed themselves; œdema set in and gradually increased; he became drowsy and semi-comatose; and died peacefully on the 17th of May 1866.[1] His funeral took place in the Old Newington Cemetery on the 22d, and was attended by the President, Council, and several Fellows of the College of Physicians, and by a few other medical and personal friends. No near relative survived him.

Dr Craigie has left behind him, in the memory of all who knew him and of many who had only read his works, the character of an able and successful cultivator of medical science. He never obtained much private practice, but as an hospital physician he had deservedly gained the character of an acute observer of disease, of an accurate diagnostician, and of a sound practitioner. As a teacher of Medicine he was successful, his instructions being highly appreciated by his students. But it is chiefly on his character as a writer that his reputation rests. During the long period during which he was connected with the Edinburgh Medical and Surgical Journal, he wrote a large number of original papers. Of these we can only name a few of the principal, such as his Clinical Reports, his papers on Cholera, on Aneurism of the Heart, on Cyanosis, on Gangrene of the Lung, and on Obliteration of the Aorta. A paper entitled "Case of Disease of the Spleen, in which death took place in consequence of the presence of purulent matter in the blood," which occurred in 1841, and was published in the number of his Journal for October 1845, is interesting as an undoubted example of the disease now known as leukæmia. The post-mortem examination was made by Dr John Reid, who found, "on examining the blood of the veins of the abdomen and the sinuses of the brain by the microscope, that it contained globules of purulent matter and lymph."

In 1828, Dr Craigie published his "Elements of General and Pathological Anatomy;" in 1848, a second and considerably enlarged edition appeared. It is a valuable work; but the progress of modern discovery, and particularly of microscopic investigation has left it in arrear of the knowledge of the present day.

Dr Craigie's great work was his "Elements of the Practice of Medicine," published in Edinburgh in 1836. It displays powers of no common order. The author's knowledge of the writings of his predecessors and of the history of Medicine is seen to be profound, while it is equally clear that every statement has been weighed by a careful and accurate observer of disease. What is known as the physical examination of disease had not at that time been generally cultivated, but it is interesting to note how thoroughly Dr Craigie had seized the spirit, and had entered into the details of Læennec's great discovery. This work had not the sale it deserved; the reason, probably, being that it was published at the high price of two guineas. The work is still to be had, at a very reduced price, and we are sure that no student or practitioner who procures it will ever regret its purchase. Though not altogether on a level with the Medicine of the present day, the great features of disease are ably described; and although the practice would now be deemed heroic, many valuable observations on the principles of treatment are to be met with. Finally, the bibliography is extremely valuable, and is a lasting proof of the erudition of the author.

To have thoroughly appreciated Dr Craigie, it was necessary to know him personally. There was a mixture of kindliness of heart and simplicity of spirit, which, taken in connexion with his great talents and acquirements, had a peculiar charm. To strangers the exterior was somewhat rough, and the manners unprepossessing, but as soon as the outer crust was penetrated, the real worth and geniality of the man became apparent. Dr Craigie was in the true sense of the word a religious man. His religion was more in his life than in his words; it consisted rather in an abnegation of self and in the performance of Christian duties, than in the utterance of professions which can be but too readily assumed.

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[1] On post mortem examination, his kidneys were found contracted and atrophied; they were in the condition known as the gouty kidney.

JOSEPH TOYNBEE, Esq.

We regret to have to record the death of Mr Joseph Toynbee, the distinguished aural surgeon, which took place at his house in Savile Row, London, on Saturday the 8th July, under very melancholy circumstances. Mr Toynbee, it appeared, had been engaged in an experimental inquiry on the effects of chloroform and other substances, in tinnitus aurium, when injected into the cavity of the tympanum. Mr Toynbee was last seen alive by his man-servant on Saturday afternoon about four o'clock. Shortly afterwards, on coming into the room, he found his master lying on a couch, with a piece of cotton-wool over his mouth and nose. He spoke to him, but, receiving no answer, removed the cotton-wool; and, being alarmed at his master's appearance, ran for assistance. Dr Markham arrived almost immediately, but found Mr Toynbee perfectly dead. There was a smell of chloroform in the room, and the cotton-wool smelled strongly of chloroform. Close to the hand of the deceased were two bottles, which had been procured from a chemist's that afternoon. One contained rectified ether, and had not been opened; the other was rather more than half-full of hydrocyanic acid. Underneath the head of the dead man was a six-ounce bottle which had contained chloroform, but was completely empty. There was no smell of hydrocyanic acid, but the odour of that substance, it is well known, disappears very rapidly. A letter was produced, written by the deceased on the 6th instant, in which was expressed an opinion that, by Clover's apparatus for inhaling, the vapour of hydrocyanic acid could be safely applied to the tympanum. The vapour was inhaled to the back of the throat, and, by holding the mouth and nostrils, was forced into the cavities of the ears, thus removing the singing and other nervous sensibility. An inquest was held upon the body, when the above and various other facts were stated in evidence. The verdict of the jury was, "That the deceased met with his death accidentally, while prosecuting his experiments, by inhaling a combination of chloroform and prussic acid; and the jury desire to express their deep sympathy with the family of the unfortunate deceased gentleman."

PUBLICATIONS RECEIVED.

Braithwaite's Retrospect of Medicine. January to June 1866. Loudon.

Cobbold,—Tapeworms (Human Entosoa): their Sources, Nature, and Treatment. By T. Spencer Cobbold, M.D. London, 1866.

Dick,—Gleet and Stricture. By H. Dick, M.D., etc. Second Edition. London, 1866.

Erichsen,—Railway and other Injuries of the Nervous System. By John Eric Erichsen, F.R.C.S. London, 1866.

James,—Sore Throat, its Nature, Varieties, and Treatment, including the Use of the Laryngoscope. By M. Prosser James, M.D. Second Edition. London, 1866.

Longmore,—The Geneva Convention for Aiding the Sick and Wounded. By Professor Longmore.

Vivisection: Is it Necessary or Justifiable? Prize Essays. London, 1866.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Graduation Address to the Gentlemen who obtained their Medical Degree in the University of Edinburgh,* 1*st August* 1866, *delivered by* PROFESSOR CHRISTISON, *Promotor.*

THE University office, which I am called upon in my turn to fill for this day only, charges the professor who holds it with two duties—to deliver an address to the forthgoing graduates in the morning, and in the evening to entertain hospitably his colleagues. I wish very much that the former task were always as easy and as pleasing as the latter. But it is not so. A graduation speech is never easy, and it may be the reverse of agreeable, should the speaker feel that he has little or nothing very suitable to say, which happens to be now my case. For, in fact, I have been concerned more or less in forty-five yearly graduation addresses, beginning with the first I heard when myself a candidate; and this is no less than the third time that the post of *Promotor Facultatis* has come round to me in turn among the twelve professors of the Medical Faculty.

In this pass, the usual topics of the day seem so stale and worn out that I feel them to be for me forbidden ground. I have already twice told our candidates what they came to College to learn, and what they had to teach themselves on leaving it; twice tried to shape out for them their duties, their conduct, their destinies; twice taught them that the pursuit of medicine as a profession, in spite of all its hardships and crosses, will seldom fail to earn for them a life of substantial happiness.

Having thus owned to you the straits I am in, I may shorten this unpromising preface by saying that on looking about me I can find no other subject so suitable or so tempting as one which has often been for some time the matter of my day-dreams, and which can scarcely have altogether escaped your mindfulness also—and this is the constitution and wellbeing of the Medical School of the University. This is a general question, that one may take up in a rambling way; which best falls in with my present mood, and with the composition of my audience: For let me add that the custom of pointing this address to the candidates only is a modern change, and that large account was taken at an earlier time also of those outside of the University, who used, as now, to honour us with their presence. Of the classical days of the Medical Faculty—of the days which were held to be classical because the professors conveyed their knowledge to the students in low Latin—a single remnant was long left in the Promotor's address. For several years even after I joined the Senatus Academicus, the address, delivered in Latin, set out with the imposing exordium—"*Candidati generosi! Collegæ spectatissimi! Auditores omnigeni!*" and it was shaped accordingly. My omnigenous audience will not take it ill that I remember them in recalling this old, almost forgotten landmark, and that I choose a subject which they can all thoroughly understand, and in which very many of them must take an interest not much less than our own.

The Medical Faculty and School of the University of Edinburgh did not exist till nearly a century and a half after the University was founded in 1582. For forty years there was only a Faculty of Arts. The Faculty of Theology arose in 1620. That of Law had its beginning in the Chair of Public Law in 1707. The Medical School is usually held to have been formed in 1720. The "University Calendar," indeed, tells us that in 1676 there was a Professor of Botany; in 1685 three others, who, under the common name of Professors of Medicine, were to teach all other branches then known; in 1705 a separate chair of Anatomy; in 1713 a separate one of Chemistry also. In connexion with the Royal College of Surgeons, too, perhaps even before 1685, there were members who delivered short courses of lectures on some branches of Medicine, and who have therefore been thought to have been the real founders of the Edinburgh School of Physic. It is odd, however, that neither these professors and teachers, nor any of their pupils, nor even tradition, have handed down to us any trace of what was taught in these early times. Certain it is that there was little fruit in the shape of graduates in the University, for there were only twenty-one doctors of medicine made prior to 1726. Thus there are strong reasons for believing, what tradition does tell, that the Edinburgh School of Medicine was founded in 1720 by the first Alexander Monro. He, the first of three of the same name who together held the Chair of Anatomy for the long period of 126 years, was a man of great ability, highly educated, of much weight in society, a profound judge of men, one in every way fit for his place and for his time; in short, a great man in his sphere.

Monro and his colleagues having been all trained and graduated in the Universities of Holland or Germany, they naturally took these foreign schools as the patterns for their own. The framework differed in two fundamental points from that of the far older English Universities—in extramural instead of college residence, and professorial instead of tutorial teaching. The relative fitness of these several modes of arriving at the main ends of university training has been often made the subject of controversy, which very lately we have seen renewed in the course of schemes for improving education at the Scottish Universities. In judging between them, regard must be had to the precise ends in view, to the genius of the people, and to the means within their reach. Whatever may have been the original design of the English Universities, they have long become schools in a great measure for the wealthy only; and they have long commanded immense resources. College residence and tutorial teaching are possible only for the wealthy, and with the aid of wealth. Extramural living and professorial teaching are, on the other hand, the most suitable for opening the doors of a university to all ranks except the humblest of all, for a university so framed needs neither costly domiciles, rich endowments, nor heavy fees. Dr Monro and his patrons chose the latter way of organizing their school, because they had to provide for the education not of the upper ranks of a wealthy nation, but of the middle classes of a people at that time poor; partly, too, because they had before their eyes the example of the Faculties of Arts and Theology, already flourishing under the same system of instruction at Edinburgh and the other Universities of Scotland; and partly no doubt also because they saw that, on the contrary, Medicine had never taken firm root under the opposite systems of college residence and tutorial teaching—nor, indeed, has it done so to the present day—in the Universities of Oxford or Cambridge. The plan originally adopted has been adhered to ever since.

To the Scottish system of extramural university life the objection has been made of a laxity of discipline favourable to immorality, vice, and insubordination. I deny, however, that any proof has ever been brought forward that, under university rule in Scotland, either the greater or lesser vices of students are worse or more frequent than in the Universities of England. As to Scottish insubordination, I deny the charge emphatically from long personal knowledge. It may perhaps be that, as some think, the *perfervidum ingenium* of my countrymen inclines them too easily to outbreak—under provocation. But I must give our students the benefit of my testimony, that during the long time I have now taught them I have not witnessed a single act of insubordination in my own class, and that none has ever occurred in another which did not arise from mismanagement on the part of the professor. Of more serious acts of general insubordination, approaching in character to riot, there have been in my time only two, which have given your predecessors a name, and which rumour has greatly exaggerated. As I happened to be, more than any one else, perhaps, familiar with the facts, I shall state them briefly, that all may judge how far the students or the system of university discipline was to blame. The first, eclipsed by the subsequent one, and now almost forgotten, happened in January 1829, when the body of the arch-murderer Burke was brought to the anatomical rooms after execution, to be dissected according to his sentence. Two thousand students took it into their heads that they should like to see him. But the College Bailie—the name of the civil magistrate who, under our old constitution, had charge of the police of the University—took it into his head to resist this wish. Presently he found it necessary to back his resistance by a force of police. A conflict of course at once arose; wounds were interchanged; the police at last were hemmed in at the anatomy corner; and matters began to look uncommonly serious. No aid was asked from the professors. Even Dr Monro was not communicated with. But a professor, who chanced to be in the quadrangle, volunteered the simple advice to put down the disturbance by granting the students their wish. The irate magistrate at first treated his adviser as a ringleader for recommending such weakness, and even spoke of committing him on the spot. But soon better thoughts prevailed. The students were allowed to file past the dead criminal that afternoon; and the privilege was extended during the next two days to 40,000 of the populace, who, like the students, behaved with the utmost decorum. This was a simple case of something like a riot, arising from nothing else than blundering punctilio and dogged mismanagement. The other incident of the like kind was an outbreak much more alarming. One morning in 1838 a knot of street boys at the College gate snowballed the assembling students, who repaid the compliment with interest. Bigger than boys then joined the fray, which led to a change of weapons. "Jam fasces et saxa volant." The conflict soon reached such dimensions as to call for the interposition of the police. But the police interposed on one side only, mistaking their trade, which is that of peacemaker, not of partisan. By-and-by the plan they fell upon was to storm the College quadrangle, in which they signally failed. One would suppose that, at this crisis at least, the civic authorities might have bethought them of calling in the aid of the professors. But in place of that, the aid they sought was the aid of the mob. With this support the quadrangle was stormed again, and again the assailants were repulsed. Night coming on put an end to the combat; which was renewed next morning, however, with increased animosity. Severe injuries were now sustained on both sides. The conflict continued till night again approached. But except that a good many bruises were inflicted and a good many prisoners taken, no impression was made on the defenders of the quadrangle. A bright idea now took possession of the magistrates in command at the seat of disturbance. A wing of the 79th Highlanders was summoned from the Castle; and the disputed territory was carried by four companies of foot, with forty rounds of ball cartridge in their pouches. The students retreating to the terraces cordially cheered the military, but continued in no mood to yield to the police. A professor then got leave from the magistrate to address them, and a few words directed to their common sense induced them all to retire to their homes. The authorities of the city made afterwards so much of this disturbance as to try five chief offenders for riot. But lawyers generally laughed at this device; by the witty counsel for the culprits, Mr Robertson, afterwards on the Bench, the trial was turned into a farce; and after four days' patient hearing, the Judge discharged the prisoners. Nevertheless, at a distance the snow tournament and police scuffle were long looked at as a formidable riot; and Louis Philippe's Ministers, it was positively alleged, made inquiry whether the row was not part of a general revolutionary insurrection among the university students of Europe. But the whole affair was really nothing else than the natural effervescence of youth, mismanaged by blundering functionaries and an ill-trained constabulary. I have given a summary of these incidents, because the facts were published never correctly, but always exaggerated. One cannot well see why the application of college rule within walls, and of municipal rule beyond them, should be unfavourable either to the morals or discipline of students in a large city, where they form only a small proportion of the population; and assuredly there has been no event in the history of this University which, when considered fairly, gives any countenance to such a supposition.

Another objection that has been brought against the university system of the medical schools of Edinburgh and the other Scottish universities, is that professorial teaching, in place of that by tutors, involves too much lecturing; and that the result is to teach too many things and none thoroughly—a smattering of much, but a sufficiency of nothing. Now, I am quite content that the soundness of this objection be tried by the testimony of facts, apart from all argument. The simple question seems to be, What has been the amount of success of the medical school of this University? I apprehend that there can be no doubt of its success having been most extraordinary. From the time when it was established by the first Monro, in 1720, no material change has taken place in its organization, except that the Chairs of Botany and Materia Medica were separated in 1768; and that twenty-one years earlier, in 1747, the important addition was made of clinical instruction, which, by the way, was nowhere else introduced in Britain till nearly a century afterwards. From 1768 to 1825, there were only six professorships in the Medical Faculty, which now consists of twice that number. After 1825 other important changes, which will be presently adverted to, were made in the constitution of the Faculty of the University and in the instruction given by it. But till then no such alterations were made as could affect the scope and plan of teaching.

What, then was the success of the school? During a period of fully one hundred years the concourse of students increased steadily, till it reached, in 1823, the number of 900. After that the number fell off greatly, for reasons to be given afterwards. The medical graduates, of whom there was only one in 1726, and not another till 1730, rose to twelve in 1750, twenty-two in 1775, fifty in 1800, and one hundred and twenty in 1820. They came from all parts of the British dominions, as well as from some foreign countries. In 1792 the list was made up of almost equal numbers from Scotland, England, Ireland, and the United States, with a less proportion from the West Indies. A census, extending over nearly one hundred years shows that the attraction to the University has fallen off only from those countries which, in the progress of time, have been supplied with universities of their own, where instruction may be had on the same footing as here at less cost, or without a far journey; and that, as fast as a new source of supply has arisen, the current thence has flowed greatly to the University of Edinburgh. On examining, first, the list of graduates for twenty-five years, ending with 1800, during which period this medical school, taught by Cullen, Black, John Hope, James Gregory, and the second Monro, was probably at its greatest height of fame; secondly, the list for ten years, ending with 1819, but adding also, for equality of numbers, about one-half of the graduates in 1820; and, thirdly, those for the last eleven years, ending with 1865, we obtain the numbers for the three periods of 800, 800, and 807. Those from Scotland were successively 179, 319, and 405; those from England were 217, 177, and 232—showing no falling-off in attraction in that part of the kingdom; from Ireland the numbers, at first greater than from either England or Scotland, were 237, 236, and 28—no material decrease having taken place till after the foundation of the Colleges of Queen's University in Ireland—since which time, indeed, there has been a prodigious descent. In the earliest of the three periods the United States supplied 78 graduates. But the subsequent foundation of excellent universities in several of the States kept many afterwards at home, and the unhappy war in 1812 turned the American tide of fashion and students to Paris; and consequently in the middle period the American graduates fell to ten, and in the last to three only. The decadence of the West Indies, whence came no fewer than 61 graduates in the first period, reduced the number to 31 in the second, and to 17 in that just ended. Switzerland and Portugal sent us 14 in the first, and 15 in the second, but none at all in the third period—for reasons not far out of sight. On the other hand, British America, India, the Cape, Mauritius, and Australia, which in the first period supplied not a single graduate, have sent, as they have successively come under the sway of Britain, 18 in the second period, and 98 in the last of all.

The concourse of medical students to the University has not continued so steady as the demand for its medical degree. Superficial or jealous observers ascribe this incongruity to falling-off in the quality of instruction, or to laxity of examination. As for the latter notion, I know well as a professor that the Faculty examinations are now not more lax than formerly, but quite the reverse; and I have no doubt you are all ready to endorse that statement. Of the relative quality of the instruction now given it does not become me to pronounce judgment. But impartial inquiry refers the apparent anomaly of more graduates among fewer students to a cause very different from a falling-off in the value of the instruction to be obtained—viz., that while the celebrity of the Edinburgh Medical Degree has continued without abatement, the facilities for obtaining it without an education exclusively at the University have been greatly increased. During fifty years, from 1775 to 1825, when the medical classes were the most populous, no education was recognised as qualifying for degrees except what was got at a university. It is true that this education might be got at any university, and without attendance in Edinburgh at all; but university attendance could be had by intending graduates scarcely anywhere else than in Scotland. America long had no medical schools of note of her own. Foreign wars for the most part closed the schools of the Continent equally against ourselves and to certain other nations friendly to Britain. Throughout England, medicine was taught nowhere in a university. In Ireland it could not be studied in a university without the costliness of college residence and submission to terms unpalatable, and to many insuperable. But Edinburgh, blessed with the ablest teachers, also offered cheap living, and no condition on the part of the student save due capacity and diligence. Thus many circumstances, intrinsic and external, conspired to favour the success of the first great medical school established in Britain for her people, her dependencies, and her offsets.

Soon after 1825, however, a change was undergone everywhere. Universities of repute, founded on the model of that of Edinburgh, and taught by men educated and graduated there, attained a firm footing in the United States. University College and King's College, London, laid the foundation of the flourishing University of the great metropolis. Erelong the circle of rivalry was completed by the foundation of the Queen's University in Ireland and its colleges. At the same time the whole universities of the Continent, many of them most attractive, have been open to our countrymen and others for fifty years past. And, further, while competition in university teaching has thus grown up on every side, another important change took place simultaneously in the curtailment of the university privilege of exclusively qualifying for the University Degree. By a radical change of constitution, university instruction ceased to be the only qualification for candidates desirous of graduating at the University of Edinburgh. Extra-academical study was recognised, first of all in a limited way at all anatomical schools in the empire for one year; and then, on a less restricted scale, for two years, of the minimum four required of all candidates.

I am here tempted, and it would be in harmony with the excursiveness of this discourse, to wander aside, in order to look a little into the wisdom of this fundamental change in university polity; but the subject is too wide to be entered upon incidentally, and therefore I shall forbear. My own opinion, let me merely say, is now and was at the time, that some change was unavoidable in the circumstances of the case, but that the authorities who carried it through would have been wiser had they done so more cautiously, more sparingly, more gradually, and altogether with more safeguards for maintaining the prosperity and efficiency of the University. But let the question rest. My present business is only with consequences.

Under the free trade thus established in teaching, numerous schools were recognised in all quarters as qualifying more or less for graduation, and new ones arose afterwards. The short-sighted men who granted all these recognitions imagined they were only creating a rivalry for the stimulation of professors; they thought that students will always go where they are best taught. But this was a great mistake. Observation, both before and since, has shown that a medical teacher, recognised by a public board, will always draw a certain number of students from a rival, though decidedly superior in ability and experience, even in the same city, much more of course in a different one, when it is the student's home. Multiply such recognised teachers, so that every large town in the kingdom has a body of them, and some idea may be formed of the effect of all these little schools upon the great schools of the country. Accordingly, at that of Edinburgh, although graduation has gone on with little or no diminution, it can be no matter for surprise that the students should have undergone a material reduction, since qualification for the degree may now be obtained in great part at fifty schools at home and abroad, besides in the University of Edinburgh itself. In fact, it has always been to me a satisfactory proof of the vitality of its medical school, and the soundness of its system of instruction, that, under such widespread competition, great and small, academic and non-academic, the medical students in the University have not fallen off in number more than has actually happened. For their number, which about 1825 varied from 800 to 900, has ranged for the last ten years between 450 and 550.

Let me now turn back to the argument which has led me into this historical interlude. We see evidence of the fitness of the system of medical education pursued at the University in the continuing demand for its medical degrees, and the populousness of its medical school. Proof to the same effect may be seen also in the fact that every university medical school that has been lately erected as a rival was established, and often avowedly, upon it as a model. And further proof may be seen in the circumstance that, since at least the beginning of the present century, Edinburgh graduates have held a prominent place in every branch of private and public professional life in this country. In the public services we find that before the recent appointment of the present head of the Army Medical Department, his predecessors for almost half a century were either Edinburgh graduates, or at least Scottish graduates similarly trained; that for the same period an Edinburgh graduate has filled the parallel office in the navy; and that in India the heads of the medical service and other prominent members of it have also been chiefly graduates of Edinburgh. Turning to civil life, we see that for more than fifty years there has never been a time without several of your predecessors being at or near the head of medical practice in London; in almost every considerable provincial city and town of England the leading physician has long been one who obtained his education and professional title here; and wherever a wandering Briton turns his steps throughout our distant colonies, he will seldom fail to encounter at the top of his profession an Edinburgh doctor of medicine.

After all that has now been said, and what you indeed yourselves know from your own observation, it will surprise you to be told that of late a party have arisen, comprising men of great weight in medical politics, who deny the fitness and superiority of professorial tuition for teaching the profession of medicine, and cry up the advantages of tutorial instruction—that is, by apprenticeship and other similar methods.

It is not less startling, nevertheless, to find that, as you are probably aware, apprenticeship has been for some time dying out in Scotland. I believe, indeed, that it is now very little sought after anywhere in Scotland, except as a condition for entering some corporation. This change has taken place entirely in my time. When I was a student, my companions, with very few exceptions, were apprentices. Every surgeon of note in Edinburgh had a swarm of them. He had a shop, too, or "surgery," in his house for them. Having chosen my profession later in youth than was then usual, I had an opportunity of forming my own opinion of apprenticeships; and I felt so dissatisfied with the idleness, the waste, and the slavery of the system, that I intimated my aversion to undergo it to him who had a right to direct me; who quite concurred with me from his own observation. Since that time apprentices have nearly vanished from Edinburgh, and not a single surgeon now keeps his own medicines. The new rule has spread over Scotland. The epidemic has also invaded England; it is spreading there, and it is a common complaint among English apothecaries that they cannot now find apprentices to do their work. This has never been made a subject of complaint in Scotland; for few practitioners have not found it rather a comfort and advantage to dispense with apprentices, to send their prescriptions to the pharmaceutic chemist, or to execute them with their own hands. The abandonment of apprenticeships has been brought about chiefly by the preference given to professorial instruction as carried on at great medical schools. The change has been effected soonest in Scotland, because the professorial system of teaching was soonest and best worked out in that country, and because there have been no corporation obstacles in the way.

It is only now making way in England, because professorial teaching has been developed there only in recent times, and because formidable obstacles have existed in the necessity, by Act of Parliament, of an apprenticeship for entrance into the Apothecaries' Society, and in the English apothecary's system of remuneration, not so much by fees as through medicines furnished by the practitioner—a custom which leads to frequent costly drugging, complex prescriptions, and consequently much pharmaceutic service.

I am far from maintaining that apprenticeship, or rather tutorial teaching under a private practitioner, or the medical officer of a dispensary or county hospital, is bad instruction, if taken at the right time, under an instructor able, willing, and zealous. But few such tutors are able and willing and zealous, for the simple reason that they seldom have any adequate object in view as a stimulus to make them so. Besides, this method of tuition is usually, and in the form of apprenticeship too often, begun at the wrong end—before, instead of after, the student has cultivated the fundamental medical sciences. Education may be first-rate under an able practitioner, who can furnish the proper opportunities, provided the student be first duly trained to use them by professorial teaching. In the inverted order, education is a delusion. These are plain truths. Nevertheless, it is my fortune to hear annually in London, on the occasion of the meetings of the General Medical Council, men of professional mark insisting that there is no better way to commence medical education than by apprenticeship, or, as they mildly call it, pupillage with a respectable practitioner. Respectable practitioners must be very different men now-a-days from the very respectable practitioners known to me in my youth as masters of apprentices—they must be very remarkable men indeed—to be competent singly to teach the several fundamental sciences of medicine, as well as every branch of medical practice—and to be possessed of the zeal and the time for the calling of tutor amidst the fatigues, and the cares, and the engrossments of professional life. That medicine can be thus taught in such circumstances is, I say, a sheer delusion. And, I must add, the delusion has a suspicious look of something worse, when I find it coupled, as it often is, with a fondness for running down the rival method of professorial teaching, now approved by centuries of experience, and with attempts to abridge greatly that mode of education—attempts which, if successful, would, I admit, lay it open to the censures levelled against it by these men.

We must not confound with these railers, however, the reformers, now neither few in number nor low in estimation, who object to the undue length of the courses of professorial tuition, and who more especially complain that lectures have been so multiplied as to interfere with practical teaching, and, above all, with practical teaching in hospitals.

One of the advantages of professorial teaching, as carried on at universities, is its elasticity—the ease with which it is accommodated to the advances made by the medical sciences. Thus, in this University, as the several branches of medicine made progress, botany and materia medica were separated, anatomy gave off surgery, physiology parted with pathology, natural history arose, and was afterwards adopted into the medical faculty; obstetrics attained the position of an important branch of education; medical jurisprudence was built up with neglected parts from half-a-dozen other departments; and clinical medicine and clinical surgery were established, to wind up all previous training, and apply it to proper practical purpose; and so, in the course of the last fifty years, the chairs of the Medical Faculty of this University have been doubled in number—a change which has taken place more or less in all medical schools at home, and to a far greater extent in those of the Continent. Nor has this extension taken place here to the injury of the practical teaching of any branch, old or new. On the contrary, in every one which admits of it, practical instruction has been added where it did not exist before. You can hardly form an idea of the advantages you have enjoyed in this respect, compared, for example, with myself. In my student days, anatomy and natural history were the only courses of instruction taught practically. Even in botany there was no field or garden teaching; and in chemistry we were left for practical instruction to our own tastes and private opportunities; and I had myself to go as far as Paris for it, because it could not be got nearer. Now, however, every student of this University may acquire a practical knowledge of these two sciences in their highest walks, and at a trifling cost. Every other branch of medicine and surgery has been supplemented in like manner.

But a grave question has arisen—whether, with the multiplication of subjects and means of instruction, the new and the old subdivisions of medicine have been duly subordinated to one another; whether the old comprehensive branches ought not to be now taught in courses of lectures somewhat curtailed; whether it has been a sound arrangement to make all, or nearly all, the new courses of equal duration with the old primary ones; whether, through incaution in both these respects, the curriculum of students may not have been surcharged with lectures; and, above all, whether clear enough opportunity and time be left for clinical instruction? To these questions I am convinced that every competent and impartial inquirer must reply that grave errors have been committed, and demand correction. A material correction has been made in this University by the gradual reduction of the amount of lectures on all branches, and eventually the curtailment of the winter session to five months. For the old courses have thus been reduced from 120 to 140 lectures, as in 1820, to 100 only. But this reduction has been too indiscriminate. It has been applied sometimes where it is unsuitable, sometimes where it is insufficient. I am prepared to show, however, that by altering our unequal sessions to two equal ones of four months each, with an interval, as at present, of a month between them, every object held in view by alarmists and reformers may be attained; anatomy, chemistry, and practice of physic restored to their due proportions, and all other branches, by a moderate extension here, or moderate abbreviation there, made more conformable to their own objects and to the suitableness of the rest, and so as to leave ample opportunity for clinical study. This is not a fit occasion for noticing the details of such a reform. But in dismissing the subject, let me add that, as appears from the medical journals, others have come to the same conclusions, and the same details of measures of reform which have occurred to myself,—that vested interests do not seem to me to stand much in the way of change, though vested prejudices may; and that I cannot be fairly charged with partiality in meddling with such prejudices and such interests, since, so far as I see, no existing chair will require so much interference as my own.

Great, then, as have been the improvements made here in medical education, we are not yet at the end of them. It is not probable we shall ever be so. But, at all events, we require now a better organization of professorships, and of university sessions. Larger means of practical instruction are required, too, in every department, and urgently in some. My colleague, the Professor of Botany, has lately had space and appliances granted him by Government in his attractive domain of science, such as will satisfy for a time even his zeal and appetite for work. But chemistry and anatomy are sadly cribbed and confined, to the detriment of the culture of these sciences here, and the risk of the University amidst the successful endeavours of other schools around us to improve the means of teaching them practically. I can likewise bear testimony to the fact, as having some charge of the finances of the University, that the annual demands of my other colleagues for the means of better practical teaching show them to be as alive to the necessity of advance in their several departments as I am of the inability of the University revenues to meet their wishes. This remark brings me to the last matter I mean to touch on in these desultory observations, —the means of the University for carrying on its own improvement.

A want of funds, no uncommon want, has been felt in the University of Edinburgh all its days. From what I have myself seen, this want must have been a constant clog on the zeal and invention of its professors. The declared intention of its kingly but parsimonious founder was to endow it well. Some think he never fulfilled his promise. Some believe, however, that he and others did endow it liberally. Among these was the late Principal Lee, a man eminent for historical and antiquarian lore, who assured me that he was at one time in possession of documents, lost to him, unfortunately, during the proceedings of the University Royal Commission of 1830, which satisfied him that the University of Edinburgh had long ago possessions which, under successful management, would now have been considerable. How these were lost no man can tell. The college property, until seven years ago, was entirely in the hands of the municipality of the city. It was therefore open to loss during the many political troubles, and in the flagitious times, of Scotland; and recent events show that a Scottish municipality may fall into great negligence in the care of funds intrusted to it. That of Edinburgh became bankrupt about thirty years ago; and the funds of the University proved to be so low that the magistracy, then the patrons, had long been obliged to supplement them from the revenues of the city. Much has been said of compliment on sundry occasions to the University management of our former governors, the Town Council of Edinburgh. I do not see much proof of success in their management of the University funds, when 250 years of it left us in so sad a plight; and if we may judge of the management from the way in which they parted with it, our opinion will not be much exalted. When the funds were transferred in 1861, by Act of Parliament, into the hands of the University itself, they induced the Legislature to leave them a good many cheese-parings; and one of these, which had been for more than a century worth only £38 a-year, was no sooner made a branch of city revenue, than it proves to be of the annual value of £500.

On the occasion of the bankruptcy of the city, the Legislature stepped in to relieve the University finances. The result of the inquiry of the late commission, of which the present Lord Justice-Clerk was chairman, has been that a further addition has been made of £4000 a-year—the utmost which his efforts and those of his commission could extract from the careful keeper of the nation's purse in a time of unexampled financial prosperity—whereas £10,000 a-year would place the University only in a condition of present efficiency. And now, what is the result? The whole University revenue, exclusive of fees paid to Professors by students, amounts to £18,500 a-year. Of this sum £7300 goes to salaries for the Principal and thirty-three Professors; £2600 for scholarships, bursaries, and prizes; £2000 for class assistants, class expenses, and non-professorial examiners; and £300 for the Reid concert—leaving £6300 for the libraries, the buildings, service, and all the other numerous branches of general yearly expenditure. Of these sums £2500 goes expressly to the medical department of the University; under which head may be also counted about £2000 of the outlay for general purposes. Our late illustrious Rector, the last Chancellor of the Exchequer, in his first rectorial address, expressed his astonishment at what had been effected by this and the other universities of Scotland with apparently the most inadequate means. It would almost appear that he and others who might reward us for this great and acknowledged merit, imagine that scant means are a sure element of success, for the late reliefs from

Governments do not make up more than the defalcation from the sinking in the value of money,—indeed, in some departments, not nearly so much.

I take this public. opportunity of making known the financial condition of the University, in order that all persons who take a sincere interest in it, and especially those whose interest it is to share that interest, may know their duty. Public spirit has been so far aroused that there is a prospect of sufficient endowments erelong from private munificence for maintaining scholarships and bursaries. But, strange to say, for a land whose natives claim for themselves a special share of patriotism and nationality, the munificence of Mr Muir is the only example for a very long time of the discovery that professorships also require to be maintained on a footing of greater liberality. And as for the general wants of the University, I have already said enough of the inadequacy of the means of supplying them, even since the late partial relief which has been granted. Among others, I call especially on the citizens of Edinburgh to consider well their position and ours. It is a common saying on public occasions here, that late changes, transferring much of the former glory and means of our city to the metropolis, have left only three great supports of our fame and prosperity—the Courts of Law, the University, and the romantic beauty of our town. Now, I warn my fellow-citizens that one of these supports is in jeopardy. Formidable rivalry has arisen on all sides around the University,—in London, in Ireland, in Glasgow. The contest cannot be supported without the sinews of war. These are got, whenever wanted, for London, for Ireland, for Glasgow. The other day it was intimated in Glasgow that £100,000 were required to supplement the building-fund for the new college there: and at the same time it was made known that £50,000 had been subscribed by her public-spirited citizens without descending lower than subscriptions of a thousand pounds. Will the citizens of Edinburgh consent to lose the race in this rivalry, and to stand the consequences? I do not believe it. They may say, tell us specifically what is most wanted. Well, then—for erecting new halls, for teaching anatomy and chemistry in the new street which we are presently to see, under the auspices and enterprise of Lord Provost Chambers, to the north of the College, a sum of £15,000 is required. Unless this be done, Edinburgh must be content with becoming a very second-rate place as an anatomical and a chemical school; and I presume I need not tell the citizens what will be the consequence of that. I could add a great deal upon this head. But the present is not the fit time or place. Besides I have already detained you too long.

I believe my strict duty on the present occasion was to administer to you good advices on your approaching outset in professional life. But, in the first plac I think this unnecessary, because you will et excellent advic om others in all circumstances arising which may require it, or from your own consciences and experience. And, secondly, I have never yet been assured that your predecessors, on whom on two previous occasions of the like kind I did bestow many good advices, have been much the better for them. Allow me, then, to offer you instead the sincere good wishes of our Vice-Chancellor and Senatus, and also my own, and our hopes and confidence that you will all in due time arrive at that professional position which your assiduity and conduct as students, and your University training, qualify and entitle you to attain.

ARTICLE II.—*On the Age of Nubility.* By J. MATTHEWS DUNCAN, M.D., Fellow of the North of England Obstetrical Society.

IN this discussion, I have nothing to say that is applicable to individual women. Such may, by peculiarities of constitution, be to a greater or less extent removed from subjection to the laws which govern the sex generally. Individuals may, with propriety, be advised to get married earlier than general laws would sanction, or later. My object is to point out the ages within which women generally should enter the married state, if they are to be guided by physiological laws. I shall hold it to be the object of mutual espousals, as it is their natural result, to multiply and replenish the earth. And I shall omit entirely from consideration at present, those moral considerations bearing on this topic, which may, in an important sense, be justly included under the designation of physiological laws.

It is, I believe, a common notion that the occurrence of menstruation indicates the arrival of the nubile age. Authors occasionally use such expressions as — advent of nubility and commencement of menstruation — as synonymous. The age of puberty may be contemporaneous with the age of nubility; but it cannot be assumed to be so without proof, for very little reflection will suggest to the physiologist many reasons for supposing that the marriageable age is generally delayed for several years after the arrival of the age of puberty. And it is my object now to show at what age it is wisest for women to enter the married state.

M. Joulin[1] makes some remarks which appear to me so just as to demand quotation here: "Nubility," says he, "is the complement of puberty. These two states should not be confounded; it is rarely that they are developed simultaneously, and their appearance is ordinarily separated by an interval of several years. Puberty is the age when the young girl becomes a woman; nubility the epoch when she may fulfil all the duties of maternity. It is frequent in our latitude to see the menses appear at eleven or twelve years; parturition will be, strictly speaking, possible, but after the young mother has escaped the dangers of a labour very painful to her, will she be able to nurse her child, to lavish on it the necessary attentions? will she be able to comprehend the whole extent of her task and to fulfil its laborious duties? No. For nubility is not arrived, and it is only then that the complete development of the organs, the powers, and the intelligence will permit her to be sufficient for the undertaking. The civil code authorizes matrimonial union when the woman is fifteen years and the man eighteen; but civil law is not in accordance with physiological law, and the race which would spring from so premature unions would soon proceed to degenerate. No general limit should be fixed, as is done, for nubility; were this term, 18, 20, or 22 years, numerous exceptions from the common level would occur."

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[1] Traité Complet d'Accouch., i. partie p. 105.

"When I am consulted as to the opportuneness of a marriage for subjects who are too young, I am accustomed to respond to the parents: that they should not marry their daughter, that is to say expose her to the chance of becoming a mother until, for a year at least, her stature has ceased to increase. This is the epoch that I fix for nubility; embonpoint may add to the volume of the organs, but nature will add nothing to their development."

It is generally supposed, especially by cattle-breeders, and I believe justly, that incomplete development of the body indicates a certain unfitness for bearing young; the too early performance of the function having an injurious influence upon the young mother and resulting in offspring that is not generally excellent. In woman the topic of development is susceptible of more intimate examination than in any animal. For we have recorded, careful inquiries into the growth of her physical frame that can be turned to account. I have already said that I do not here enter upon the important considerations of moral development in the female; and in physical development I shall only condescend on the stature, the ossification of the pelvis, its development in shape, and the development of the genital organs.

The condition of the development of the genital organs seems to be that of completed growth in size and form as early in life as marriage is ever contemplated in European countries, and therefore, no restriction of the nubile age can be based on their state. I say, "seems to be," for I know of no refined investigation of the anatomical details bearing on the subject. The statements of A. Farre,[1] and of Kussmaul,[2] are not quite to the point; and it can only be said that they imply completed growth at the age of puberty. But I may assume that few will maintain that the age of puberty and of nubility are identical; and the mature state of the genital organs at early ages, even if demonstrated, therefore, leaves the scope of this inquiry unrestricted.

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[1] Article "Uterus" in Todd's Cyclopædia of Anatomy and Physiology.

[2] Von dem Mangel, etc., der Gebärmutter.

"The full growth of man," says Quetelet, "does not appear to be attained at his twenty-fifth year."[1] Elsewhere the same author remarks that "the limits of growth in the two sexes are unequal: first, because woman is born smaller than man; second, because she sooner finishes her complete development; third, because the annual increase which she receives is smaller than that of man." These conclusions of Quetelet, regarding the stature of women, are founded on a large collection of data of different kinds, and may be accepted as proof that women generally are increasing in stature till at least nearly their twenty-fifth year of age, that till this age they are immature inasmuch as they are, till then, not full grown in height.

The tardy ossification of the bones of the pelvis naturally attracts attention from their locality and inseparable connexion with the function of reproduction. The full details of the osseous growth and perfectioning of the pelvic bones I shall not encumber this discussion with. I shall merely refer the inquirer to anatomical works on the subject, and here make two quotations[2] from the article "Pelvis," by John Wood, published in the Cyclopædia of Anatomy and Physiology:—"About the time of puberty, as first pointed out by M. Serres, a distinct complementary point of ossification appears in the cartilage dividing the bones in the cotyloid cavity. . . . According to Meckel, the pubis and ischium join first with each other, and the ilium becomes united to them afterwards. At the same time appear the four remaining complementary points as epiphyses. . . All these are soldered to the bone, about the twenty-fourth or twenty-fifth year, the epiphysis of the iliac crest being the last to join." Speaking of the sacrum, the same author remarks,—"At the age of sixteen years, the epiphysial or complementary ossific points begin to form, viz.: on each articulating surface of the bodies of the sacral vertebræ is developed, as in the true vertebræ, a horizontal plate of bone, which, after coalescing with the bodies to which they respectively belong, finally (except the first and last) become soldered to each other from below upwards, commencing with the two last vertebræ, at from the sixteenth to the eighteenth years, and completing the formation of the sacral bone by the union of the two first vertebræ, at from the twenty-fifth to the thirtieth years. Between the eighteenth and the twentieth years begins the formation, by scattered granules, of four lateral plates of bone—one on each side, forming the iliac articular surfaces, opposite to the three first vertebræ—and one on each side, opposite the two last. These unite with the sacral bone about the same time that its upper vertebræ coalesce."[3]

Having thus shown the lateness of the completion of the structural development of the pelvis as a bony skeleton, I advance to the still more important topic of the time of the complete construction in shape or form of the same part. It would be tedious and out of place here to show the obstetrical advantage and use of the special shape of the fully grown female pelvis. I assume this.

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[1] A Treatise on Man, p. 61.

[2] Vol. v. p. 120.

[3] See, also, Litzmann, Die Formen des Beckens, s. 16.

"According to Dupuytren," says Mr Wood, in the article from which I have just been quoting, "the female pelvis differs very little from that of the male till puberty, at which period it has a general triangular form in both sexes, but, after that period, it becomes rapidly developed, and soon assumes its distinctive sexual character. The transverse diameters begin to exceed the conjugate, and, in the female, attain a great preponderance, constituting one of the great characteristics of the fully formed human pelvis, as distinguished from that of the lower animals."

Burns offers us statements which are more apposite, and in distinct words gives them a bearing upon the question of nubility. The grand feature of his remarks, for our present purpose, is his making out the female pelvis just before puberty, and perhaps so late as eighteen, to be far from having assumed the form best suited for the difficulties implied in commencing maternity. "The shape," he says,[1] "is different in the child and the adult. The dimensions of the brim are reversed in these two states; the long diameter of the fœtal pelvis, extending from the pubis to the sacrum. By slow degrees, the shape changes. These changes, however, must be affected by the general growth of the body, and the term of puberty. At nine years, the conjugate diameter is two inches and seven-eighths, the lateral an eighth less; at ten years of age, the antero-posterior diameter is three inches and a quarter, the lateral is an eighth more; at thirteen, the former is still the same, but the latter has increased to three inches and three quarters; at fourteen, the former is three and three quarters, the latter four inches. Just before puberty, perhaps so late as eighteen, the antero-posterior diameter is three inches and seven-eighths, the lateral four and a-half. These measurements I give, however, from individual pelvises. If a girl should very early become a mother, the shape of the pelvis may occasion a painful and tedious labour." "To the female sex," says Aristotle, "premature wedloek is peculiarly dangerous, since, in consequence of anticipating the demands of nature, many of them suffer greatly in childbirth, and many of them die."[2] Litzmann[3] has gone into this topic with greater fulness than Burns, but I shall only extract from his work the observation that he has given the dimensions of two female pelves of young women of 19 years of age, and that in both the measurements distinctly indicate that they have not yet arrived at the average size and shape. They, therefore, fully confirm the statements of Burns on this point, in every respect.

It is known that a first confinement is much more dangerous than any of those which follow, at least until the confinement reaches a number above that ordinarily attained to by fertile women. I have elsewhere shown that this extraordinary mortality accompanying first labours is about twice that accompanying all subsequent labours taken together.[1]. It evidently, then, becomes of extreme importance for the young woman entering on the risk of a first confinement to do so at the most favourable age. The age of smallest mortality after a first confinement should be chosen for encountering its risks. It has been long known that age has considerable influence on this mortality. But I know of no satisfactory data for deciding at what age a woman most safely bears a first child. In another place,[2] I have entered upon the subject and shown that the quinquenniad, 20 to 24 years inclusive, is the safest for parturition generally, and I think it a natural inference that that age is the safest for a first parturition, an inference too, which appears to me to have the support of the general tenor of the argument to which I have made reference. If a woman is to multiply and replenish the earth, as married women ordinarily do, she must survive her first confinement. To have the best chance of this survival she should marry between 20 and 25 years of age.

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[1] Principles of Midwifery, tenth edition, p. 23.

[2] De Republ., l. vii. c. 16. See Sadler, Law of Population, vol. ii. p. 272.

[3] Die Formen des Beckens.

There is scarcely any condition of a married woman which more surely causes unhappiness than sterility; its avoidance is therefore a great object. If a married woman is sterile she fails to secure the great end of the union. It is evident that the age of nubility should be fixed with a view to the securing of fertility. I have elsewhere[3] shown that age at marriage has considerable influence upon the occurrence of sterility; and the age at marriage found to be most secure of fertility is the quinquenniad, 20 to 24 years inclusive. So far, then, as the avoidance of sterility has any bearing upon the age of nubility the quinquenniad, 20 to 24 years inclusive, is to be selected.

"Premature conjunctions," says Aristotle, "produce imperfect offspring, females rather than males, and these feeble in make and short in stature. That this happens in the human race as well as in other animals, is visible in the puny inhabitants of countries where early marriages prevail."[4] These opinions of Aristotle are confirmed, so far as stature is concerned, by my own researches and those of Professor Hecker, regarding the length and weight of children born of mothers of different ages.[5] And the statistics of Dr A. Mitchell seem to show that immature mothers and old mothers are specially liable to bear idiot children.[6]

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[1] Edinburgh Medical Journal, September 1865.

[2] Ibid., October 1865. Table xi.

[3] Transactions of Royal Society of Edinburgh for 1866. On some Laws of the Sterility of Wives, chap. iv.

[4] De Repub., c. iv. p. 246, Gillies' Translation. See Sadler, l. c., p. 273.

[5] Edinburgh Medical Journal, December 1864.

[6] Ibid., January 1866.

If, in the foregoing paragraph, it is established or rendered probable that the children of very early marriages are less strong and healthy than other children, it may be considered a work of supererogation to show that such children die in a higher proportion in early life than others. But the demonstration of both of these points is not perfect and the proof of the one goes far to confirm the other, and is therefore demanded.

Sadler, in his work on the Law of Population, enters upon the mortality of children as influenced by the age of the mother at marriage. His enthusiasm for a preconceived theory diminishes the value of his remarks on the topic; and the circumstance, that his data do not give the results of marriages after 32 years of age of the woman, renders the whole of less value than a more extended series of data and calculations would possess.[1] So far as they go, however, they show a diminishing mortality among the children in proportion as the age at marriage increases.

A more valuable collection of data is to be found in the report of an investigation into the state of the poorer classes of St George's in the East.[2] The following table extracted from that document gives the foundation of the conclusions arrived at, which I now give in the words of the report. " From this abstract it is obvious, that of the three first periods, the children born of marriages formed in the quinquennial term of life, 21–25, are subject to a less rate of mortality than those of the period immediately preceding or immediately following, the rate of mortality in the most advanced period, 31–35, is very irregular, and no doubt arises from the small number of families included in that group."

Years elapsed since birth of first child.	Mortality per cent. of the Children born to Marriages formed at Ages			
	16–20	21–25	25–30	31–35
10	36·87	37·09	37·89	35·48
20	47·44	43·10	44·36	16·67
30	53·03	43·89	48·53	64·29
40	63·12	57·14	68·00	50·00

This interesting table, then, of the report cited, shows a greater survival of children born of women married at from 20 to 25 years of age than at any other; and as the rearing of children is assumed to be one of the chief objects of marriage, the age to be selected for marriage with a view to this object is 20 to 25 years.

Before leaving this point I must add the evidence of two gentlemen skilled in the breeding of lambs and of calves. They say, that the mortality of the young of these animals, when the mothers are immature, is much greater than when they are well-grown. One of them says, " Taking the first lamb from ewes at one year old has in almost every case failed to be remunerative, owing to the frequent deaths of the lambs. The same may be said of young heifers though the mortality of the offspring may not be so marked as in that of sheep."

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[1] Law of Population, vol. ii. Tables xliv. and xlvi.

[2] Journal of Statistical Society, xi. p. 223.

Considering the argument drawn in this paper from the avoidance of sterility, it may appear to some to be unfair to found any argument upon the avoidance of an excessive family. And I admit that what I have to adduce on this topic may partake in some degree of the nature of an arbitrary assumption. Having, however, shown some grounds for believing that ten is the ordinary limit of fertility in women living in wedlock during the whole child-bearing period,[1] and having shown the very great mortality attendant upon confinements numbering the tenth or higher,[2] I venture to express my belief that a family rising above ten begins to be excessive. Now it appears to me that all the knowledge we possess of the laws of fertility refers the excessively numerous families in a population to fertile women who have been prematurely married. Such women certainly go on longer bearing children than any other, counting up to the end of the child-bearing period in the women compared.

Another class of women is liable to have children with dangerous rapidity and often a family that is excessive, at least when the duration of married life is taken into account, namely those who are fertile when married comparatively late in life.

Child-bearing by an immature mother is popularly held to be dangerous to the continued general health of the mother, and to prevent the complete development of her in size and beauty. I have no positive evidence to adduce in favour of this generally entertained notion, which my own experience appears to me to confirm. In its corroboration, however, I can adduce the ample experience of eminent breeders of the lower animals. I have had this opinion expressed to me, especially in regard to mares, cows, ewes, and bitches.[3] "Experience," says Sussmilch, "shows this in animals; as, for example, among great cattle, the cow, which has a calf too young, never comes to the size and strength which she otherwise would have done." To this Sadler adds, "Of this principle Virgil was fully aware; hence, he says,

> Sed non ulla magis vires industria firmat,
> Quam venerem et cœci stimulos avertere amoris,
> Sive boûm, sive est cui gratior usus equorum.

I might again appeal to the very same principle in the vegetable kingdom; for instance, there is not a horticulturist who is not fully aware that premature fruition is injurious to the growth and future prolificness of all the fructiferous tribes in existence."[1]

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[1] Transactions of the Royal Society, 1866, p. 292.

[2] Edinburgh Medical Journal, September 1865.

[3] I wished at this point to make use of a valuable paper by Dr Tuke of the Fife County Asylum, on Puerperal Insanity. But I find it is not easily adapted to my purpose, though it contains many details which, especially if further elaborated, may be turned to account on questions like that discussed in this paper. The paper is in the number of this Journal for May 1865.

In conclusion, it is almost useless to add that I consider the age of about from 20 to 25 the nubile age of woman. The numerous facts and arguments I have adduced, appear to me to bear out distinctly this conclusion. Below 20 years of age, woman is immature, she runs considerable risk of proving sterile, and if she does bear a child she runs a comparatively high risk of dying in childbed; besides, her early marriage brings many other disadvantages. The woman above 25 years of age is mature, but to counterbalance this, she encounters some greater risks than the very young wife's though of a similar nature.

ARTICLE III.—*Observations on the Physiology of the Larynx.* By JOHN WYLLIE, M.D., M.R.C.S., Senior President of the Royal Medical Society, and lately one of the Resident Physicians in the Royal Infirmary. (An Inaugural Dissertation for which a Gold Medal was awarded by the University of Edinburgh at the Medical Graduation of August 1865.)

THIS paper is intended as a contribution to the Physiology of the Larynx, and not as an exhaustive treatise on the subject. It embodies the results of a somewhat lengthened series of experiments and observations on the following topics:—

1st, On the descent of the epiglottis during deglutition.
2d, On the valvular action of the glottis.
3d, On the production of voice.

I.—*On the Descent of the Epiglottis.*

In former times the epiglottis was thought to be the only safeguard against the entrance of food into the windpipe, and its integrity was therefore regarded as of almost vital consequence. But more recently, cases were recorded in which it had been entirely removed by accident or destroyed by disease, and yet in these the bolus did not find its way into the larynx, for this was still effectually prevented by the closure of the *glottis*, so that the act of deglutition continued to be performed with safety, and even with ease. Magendie, also, in his experiments, repeatedly removed the epiglottis of the dog without apparently putting the animal to much inconvenience.[2] Many physiologists were therefore led to regard this valve as only of secondary importance, and merely accessory to the glottis in the performance of its function. In our own time, however, another class of cases is being observed with the aid of the laryngoscope, in which the *glottis* is permanently incapable of closure, owing in some to paralysis of the intrinsic muscles of the larynx, and in others to the presence of tumours upon the vocal cords; and yet, in the majority of these, the larynx seems, by the epiglottis alone, to be as securely guarded as it was when the parts were healthy. There are, then, at the opening of the windpipe, two protecting valves, either of which is in itself capable of closing it when food is passing; but a double security is obtained by their simultaneous action. Of the two, perhaps the epiglottis is the more important in performing this function, for by its shape and position it seems specially fitted to roof in the larynx; and, in ordinary circumstances, it alone is actually of service, for no food comes in contact with the glottis, which, nevertheless, is closed as an additional protection.

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[1] Law of Population, vol. ii. p. 275.

[2] Magendie's Compendium of Physiology, p. 240.

What, then, is the mechanism by which the depression of the epiglottis is accomplished? On this subject various theories have been propounded. For example, it has been maintained that "the larynx is closed, or rather is covered, by the epiglottis depressed mechanically by the alimentary bolus,"[1]— an explanation which must have appeared improbable to any one who thought of such an arrangement protecting the larynx from fluids as well as solids. A second and much more currently accepted theory is, that during deglutition the root of the tongue is pushed downwards upon the epiglottis, which is thus in its turn depressed upon the larynx. This view is modified by some, who suppose that when the larynx is elevated, the epiglottis must be pressed upwards against the base of the tongue, which in thus effecting its closure acts the part only of a passive agent as it were. Thirdly, it is maintained that the action in question is accomplished solely by the special depressor muscles of the epiglottis, and that after the passage of the bolus the valve is raised again "by its own elasticity and that of its ligaments." This view, which was formerly promulgated by Santorini, has lately been supported by Czermak, who concludes, from his experiments with the auto-laryngoscope, that "the epiglottis is not passively depressed, for example by the base of the tongue, but this depression is actually caused by the proper muscles of the epiglottis itself."[2] A tactile examination of the epiglottis during deglutition fully confirms this statement in so far as it refers to the base of the tongue. The theory, however, that the action of its special depressor muscles is the sole agency which effects the descent of the valve, is met by a serious objection. For, the epiglottis being raised after the passage of the bolus—"by its own elasticity and that of its ligaments"—it naturally follows, if we accept this statement, that, in accomplishing its depression, the muscles must have overcome some resistance from these ligaments. One would, therefore, expect to find a development of muscle commensurate with such resistance; but a dissection of the parts shows us that these depressors of the epiglottis are mere thin bands of muscular fibre, which, if the larynx be not well developed, are too apt to escape observation altogether. Again, if we turn to the lower animals, we find in certain of the ruminantia, a strong muscle attached to the front of the epiglottis and stretching forwards, in some, into the substance of the tongue, and in others, the sheep for example, dividing in front into two processes, each of which becomes attached to one of the stylo-hyal bones, just above their articulation to the front of the os hyoides. With the existence of this strong elevator muscle we find no corresponding development of the depressors, they are here as weak and thin as in the human subject. It is, then, very improbable that, in depressing the epiglottis, they alone should be the agents employed. Let us see if, in the phenomena of deglutition, we can find anything which may render them assistance.

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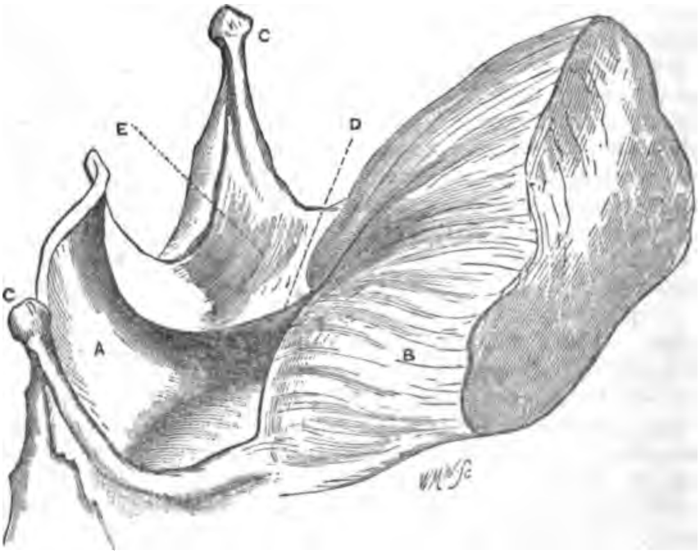
[1] M. Meyer. [2] Czermak's Monograph, translated by the Sydm. Society.

When the parts concerned in the act of swallowing are carefully dissected, two ligaments are found which are specially adapted to support the epiglottis when the larynx is at rest.[1]

The Epiglottis and its Ligaments.



A, The epiglottis. B, The base of the tongue. C C, The cornua of the hyoid bone. D, The glosso-epiglottic ligament. E, The hyo-epiglottic ligament.

First, there is the *glosso-epiglottic* ligament. This has been called by some anatomists the *frœnum epiglottidis.* It seems to be the prolongation backwards of the fibrous septum of the tongue, and at its origin many of the muscular fibres of the cortex are inserted into it. Posteriorly, it crosses the hyoid bone, and becomes attached to the epiglottis about its middle. It stands out prominently in the mesial line, its sharp edge being enclosed in the middle glosso-epiglottic fold of the mucous membrane. The microscope shows it to be chiefly composed of elastic fibres, but notwithstanding this fact, it is by no means easily stretched when it is isolated. This ligament is the representative, as Magendie pointed out, of the elevator muscle of the epiglottis in the ruminantia, to which I have already referred. I have, in several cases, observed muscular fibres clustering around it even at the epiglottic attachment.

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[1] These ligaments have been carefully described by Bishop in his article on the Larynx, in Todd's Cyclopædia of Anatomy and Physiology, and by other special writers on the larynx; but they are overlooked by the author of an ordinary text-book.

The second ligament is the *hyo-epiglottic* (E), one of equal importance. This is a well-marked membranous expansion stretching from the concave edge of the hyoid bone downwards to the anterior surface of the epiglottis. Its line of origin extends in many cases backwards almost to the point of the great cornu on either side, but often this attachment is not so extensive, the fibres taking their rise almost exclusively from the body of the bone. Its insertion is beneath that of the glosso-epiglottic ligament upon the lower thickened half of the valve. The direction of its fibres varies according to the point of origin, those arising near the points of the great cornua being directed forwards, downwards, and inwards, whilst the central fibres from the body of the bone are directed simply downwards and backwards.

When the larynx is at rest, and the hyoid bone is separated by an interval from the thyroid cartilage, these two ligaments dip downwards to their insertion, and hold the epiglottis suspended in a semi-erect position above the opening of the windpipe. But, in the act of deglutition, the box of the larynx is elevated, and the base of the tongue is at the same time carried backwards in the pharynx. If we imitate their movements with the dead parts, we find *that both ligaments become relaxed;* for, when the larynx is raised, the thyroid cartilage is made to impinge upon the hyoid bone, and the epiglottis being attached by its apex to the former, the broad ligament that stretches between it and the *os hyoidis* is necessarily slackened. In a similar manner, by the backward movement of the base of the tongue, the glosso-epiglottic ligament is relaxed. The epiglottis has thus lost the support of both its sustaining ligaments, and by its own gravity it tends to droop towards the opening of the larynx,—if touched by the finger its closure is very easily completed. During deglutition, if the little depressor muscles are brought into action in these circumstances, they will meet with no resistance, and by very slight traction on their part, the roofing in of the larynx will be rendered quite secure. After the act of deglutition, the larynx once more descends, the depressor muscles cease to act, the ligaments are put gently on the stretch, and the epiglottis is restored to its original position. The return of the valve, it will thus be observed, is due, not to its elastic ligaments having recoiled after being stretched, but, on the contrary, to their being gently tightened after a temporary relaxation.

A concluding experiment may illustrate the action of these two ligaments when they are in a state of extreme tension. In the highest notes of the voice, the larynx is raised as it is in deglutition; but there is this difference, that the os hyoides is pulled further forwards by the genio-hyoid muscles, so that the point of the pomum Adami engages itself behind the hyoid bone, instead of merely impinging upon it. The hyo-epiglottic ligament is thus put upon the stretch. In like manner the glosso-epiglottic is pulled upon by the muscles of the tongue. If, now, the finger be introduced into the pharynx when the highest note is being sung, it will be found that the epiglottis is drawn forwards upon the base of the tongue, so that its anterior surface actually touches the mucous membrane of that organ; the only part of the valve which can be pushed backwards is its free upper border, which may be bent in that direction by the finger,—its middle portion is almost immovable. If, in the same circumstances, the throat be examined with the laryngoscope, these observations will be confirmed; and it will be further seen that the natural concavity of the posterior surface of the epiglottis is considerably increased, owing to its centre being pulled forwards, whilst its lateral edges are retained somewhat in position by the aryteno-epiglottic folds. These observations, however, are more strictly concerned with the function of voice. I mention them here only to illustrate the importance of the glosso-epiglottic and hyo-epiglottic ligaments in regulating the position of the epiglottis.

II.—*The Valvular Action of the Glottis.*

The circumstances in which shutting of the glottis is observed to take place may be classed under three heads:—

1st, Partial closure takes place during phonation, the vocal ligaments being then approximated, so that only a narrow chink is left, through which the air escapes.

2d, In the act of deglutition, complete closure occurs simultaneously with the descent of the epiglottis, as we have already seen.

3d, Perfect closure also takes place whenever the air is compressed within the lungs and trachea, whether by a voluntary effort as in holding the breath, or involuntarily, as before each act of coughing.

I shall, in the meantime, confine my remarks to the second and third of these conditions, reserving the first for that part of the paper which treats of the production of voice.

That the glottis is shut during the act of deglutition is proved by the experiments of Magendie on dogs, and by the observation of such cases as one recorded by Mayo. A man, in an attempt to destroy himself, made a deep gash in the upper part of his throat which extended into the pharynx. "The wound," says the narrator, "was horizontal, and passed backwards over the upper border of the thyroid cartilage, severing the epiglottis near its attachment to the latter, yet the patient, in two or three days after the injury, swallowed easily, and without the least irritation of the larynx, although so free was the opening in the throat that some of the fluid swallowed always ran out at the wound."[1] Observations such as these leave us in no doubt that the glottis is shut during the act of deglutition; but, even under the most favourable circumstances, it must be extremely difficult to observe the exact manner of its closure, and accordingly we are left very much to infer that the order of phenomena is the same in deglutition as we observe it to be in voluntary shutting of the glottis.

The mechanism of this voluntary closure has been of late years beautifully demonstrated by Czermak. "During complete and hermetic closure," says that author, "I have observed the following phenomena:—

"*1st,* The arytenoid cartilages intimately meet at their internal surfaces and processes, and bring the edges of the vocal cords in contact.

"*2d,* The superior vocal cords approach the inferior so as to obliterate the ventricles of Morgagni, at the same time they also meet in the median line.

"*3d,* The epiglottis being lowered and its cushion made more prominent still, it presses against the closed glottis, the contact taking place from before backwards. All these changes take place with such rapidity that great attention is necessary to examine them in detail."[2]

The mode of performing these experiments is, first to shut the glottis gently, and then to compress the air within the chest and trachea, by putting the muscles of expiration more and more powerfully into action.

With the second statement in Czermak's account of the phenomena, viz., that the superior cords approach the inferior so as to obliterate the ventricles of Morgagni, my own observations, as will be seen presently, do not concur. Any observation with the laryngoscope, regarding the condition of these ventricles is extremely liable to fallacy, for their oblong orifices are situated in the lateral walls of the larynx and look inwards, so that, observing them from above, it is almost impossible to tell whether they are open or closed.

The question now to be considered is, What is the use of this complexity in the shutting of the glottis? "No doubt," as Czermak remarks, "these threefold occurrences in the hermetic closure of the larynx explain the resistance which the glottis successfully opposes to the pressure of the air without the development of much force during the effort." But what is the exact importance of the false and of the true vocal cords,—what is the physiological purpose of the ventricles of Morgagni? These are problems which remain unsolved.

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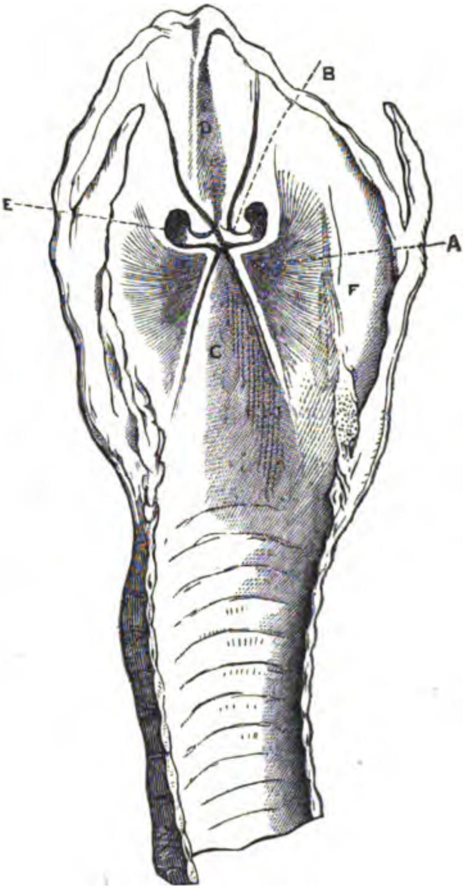
[1] Mayo's Physiology, pp. 371 and 382.

[2] Czermak's Monograph.

View of the Glottis from behind.



A, True vocal cord. B, False vocal cord. C, Wedge-shaped space below true cords. D, Wedge-shaped space above false cords. E, Ventricle of Morgagni. F, Ala of thyroid cartilage.

The difficulty in deciding these questions has, it appears to me, arisen in some measure from an anatomical misconception. The vocal cords are considered by many as the free edges of membranes which are flattened both above and below. But if a vertical section be made through the larynx so as to divide both false and true cords transversely, it will be found, that when these are approximated, the cavity of the larynx above the false cords as well as that of the trachea below the true, is wedge-shaped (D and C). When thus in opposition, the upper surfaces of the true vocal ligaments present a broad flattened plane slightly hollowed out on each side, but on their tracheal aspect the mucous membrane is observed to fall away obliquely downwards and outwards, thus leaving an angle of considerable size, which forms the margin of each vocal ligament. The same obliquity is observed in the mucous membrane above the false vocal cords, whilst their lower margins are defined by the openings of the ventricles of Morgagni, well-marked pouches which extend upwards behind them about half-an-inch. These appearances are represented in the accompanying drawing, for which as also for that showing the ligaments of the epiglottis, I am indebted to the kindness of my friend Mr Ramsay, one of my fellow-residents in the Royal Infirmary. This sketch was taken from a recent dissection, the posterior wall of the trachea being removed, as also that of the cricoid cartilage with the attached arytenoids. The vocal cords are cut through about their middle, so as to exhibit in the section the ventricles of Morgagni (E).

Now it is to be borne in mind that by closure of the glottis complete stoppage is effected, not only of inspiration, but also of expiration, the most powerful efforts at either being rendered quite ineffectual. This is, no doubt, in a sense due to the action of those intrinsic muscles of the larynx which close the rima, but the strength of these comparatively minute structures is surely in itself inadequate to resist the enormous power which the air may be made to exert upon the glottis from within, during a forcible attempt at expiration, as well as its pressure from without, when we try to inspire.[1] From this consideration one is naturally led to suspect the existence in the glottis of some well-adapted valvular arrangements, suited to control both the entrance and exit of the air. With the view of ascertaining whether such arrangements exist, and, if so, what is their precise nature, I made the following experiments upon the dead larynx:—

Having brought together the true cords (A) in the vocalizing position, by transfixing the arytenoid cartilages with a needle, and applying over it a figure-of-eight ligature in a manner which I shall afterwards describe (see experiments on voice), I blew upwards through the trachea, and at the same time attempted to stop the current of air by bringing the true vocal cords accurately into contact; this being done by pressing the arytenoids firmly between the finger and thumb. After repeated trial I found that no manner of adjusting the cartilages could completely obstruct the passage of the air, for as I have already said the space in the trachea below the vocal cords is wedge-shaped (see drawing C), and the air was thus enabled to wedge itself between the vocal ligaments, producing in its escape a sound which more or less resembled the voice. Feeling satisfied that the true cords could not present any serious obstacle to the *exit* of air when the glottis is closed, I now drew air backwards through the larynx, in order to test their value as opposing its *entrance* during attempted inspiration. I found that by a very slight and easy adjustment of the arytenoid cartilages I could prevent its entrance entirely. The cords did not require to be forcibly pressed together; the circumstances most favourable for obtaining their perfect valvular action were that they should be accurately approximated but not stretched, so that when air was blown upwards through the trachea a low note was produced. In this condition by gently pressing forward the apices of the arytenoid cartilages the air was completely obstructed.

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[1] "We may wonder that muscular fasciculi so slight as those of the larynx, however advantageously placed, should be capable of counteracting the efforts of the diaphragm and other muscles of inspiration. But they are found to be no less efficient against the muscles of expiration."—*Mayo's Physiology.*

I next proceeded to ascertain the effect of bringing together the *false* vocal cords (B). These are not so easily brought into contact as the true, and the means adopted were therefore rather more complicated. Still keeping the arytenoid cartilages fixed together as before, with a needle and ligature, I passed, in addition, two other needles through the anterior surface of the thyroid cartilage, one on each side of the middle line, just opposite the anterior attachments of the cords, and carefully guided their points backwards to their arytenoid extremities, so that each needle was contained within the free edge of a false ligament. The posterior attachments of the cords were then approximated by pressure between the finger and thumb, and at the same time in their whole length they were brought into close apposition by separating the heads of the needles in front of the thyroid cartilage. On attempting to blow upwards through the trachea, when the parts were so arranged, the closure of the glottis was found to be complete. The simple coaptation of the free edges of the false cords proved itself sufficient to obstruct entirely even a powerful current of air from below.

The conclusion to be derived from these experiments is obvious. There is within the larynx a double valve which is capable of controlling both the exit and entrance of air. The plan found so commonly throughout the body in such structures, in the aortic and ileo-cœcal orifices, and in the course of the veins, holds good here likewise. In the upper half the resemblance is most obvious. Comparing it with the aortic valve we find the representatives of the sinuses of Valsalva in the well-marked ventricles of Morgagni, whilst the cusps are reproduced in the two folds of mucous membrane, whose free edges are known as the false vocal cords.

The same design may be traced in the lower half of the valve. When the true vocal ligaments are brought into apposition, no deep sinus is found on either side, but their upper surfaces form together a broad flattened plane slightly hollowed out exterior to the margins of the rima glottidis, and this arrangement, owing to the greater density and mobility of the parts, is found to act as efficiently as the well-marked ventricles and cusps of the upper valve.

A laryngoscopic examination fully confirms the view which I have just stated. The following phenomena may then be observed:—

1st, When the glottis is simply closed, and no effort is made either to take in breath or to expire, the false cords are separated by a very narrow interval through which the edges of the true vocal ligaments may be seen in close apposition.

2d, When an effort is made to *inspire*, the superior cords meet in the middle line so as to leave only a very small triangular opening posteriorly, through which there still may be caught a glimmering of the pale surface of the true ligaments.

3d, When expiration is attempted, the false cords are immediately coaptated throughout their whole length, and if the effort made be powerful the parts above are observed " to arch or curve outwards without allowing the air to escape" (Czermak). This swelling out of the mucous membrane at the upper part of the larynx can be due to nothing but the inflation of the ventricles of Morgagni beneath.

The physiology of these ventricles and of the superior ligaments of the larynx is thus after all so beautifully simple as to render it very surprising that their action was not long since recognised. Formerly, the difficulty no doubt lay in the impossibility of displaying the parts in the living body. Even before the days of the laryngoscope, however, I find, on looking over the various treatises on the larynx, that among the numerous conjectures regarding their use, one shrewd guess has been made, which very nearly approaches the whole truth. In Mayo's Physiology there occurs the following passage:—" Mr Willis has very ingeniously conjectured that the closure of the glottis takes place through the inflation of the ventricles from below, when the ligaments have been approximated and an expiration has been attempted. An objection," he continues, " was suggested to me by Mr Wheatstone, which of itself appears fatal to Mr Willis's hypothesis;—we can close the larynx as well during inspiration as during expiration."[1] I have not yet discovered this suggestion in Mr Willis's own writings, but it is evident that he has never thought of the *true* cords as preventing the entrance of air, otherwise Mayo's criticism would not have been offered.

The characters of that peculiar brassy cough which exists so often in cases of aneurism of the aorta where the recurrent laryngeal nerve is involved, may, I think, be explained in the following manner. Each normal act of coughing may be divided into two stages. *1st*, The complete closure of the glottis, false and true cords together, so as to enable the air to be compressed within the chest and trachea; its escape being prevented by the false cords and ventricles of Morgagni as just explained. *2d*, The sudden and complete opening of the glottis, allowing at once the explosive escape of the compressed air. Both of these movements are performed by muscular action. But in the typical aneurismal cough the glottis is neither closed nor opened perfectly, for the pressure upon the recurrent nerve has impaired its power of transmitting a normal stimulus to the muscles, so that whilst the true cords are brought closely enough together to produce voice, the false cords —not so easily approximated—remain somewhat apart, and the air is therefore allowed to escape, so that the cough is imperfect at its commencement. Again, it is brassy or voicy, because in the second stage the opening of the glottis is not so sudden and perfect as it ought to be, the muscles being kept in a state of spasmodic contraction by the direct irritation of the nerve where it is pressed upon by the aneurismal tumour, so that in the muscles there may be said to exist a tendency to spasm, associated with a partial loss of voluntary motion, a combination not unfrequent in other nervous affections. Sometimes the spasm is so great as to give rise to crowing on inspiration, and, in a degree greater still, it is the frequent cause of death by asphyxia, for the true cords remaining in apposition shut off by their valvular action the entrance of the air.

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[1] Mayo's Physiology, p. 381.

In order to understand the action of the muscles by which the glottis is closed, one must have a correct conception of the arytenoid cartilages. Each of these small complicated bodies has somewhat the appearance of a minature horn, very much flattened from before backwards in its upper two-thirds, so as to present an anterior and a posterior surface with an inner and an outer edge. The *posterior surface* is markedly concave from above downwards, and on it are inserted the fibres of the arytenoid muscle. On the convex *anterior surface*, about its middle, there is a well-marked pit, which gives attachment to the greater part of the fibres of the false vocal cord, and on the lower part of this surface there are also inserted some of the fibres of the thyro-arytenoid muscle. The *inner edge* is the part of the cartilage which is brought into apposition with the corresponding line of the opposite side when the vocal cords are approximated; it is quite smooth, and is covered only by the mucous membrane. Inferiorly, this border spreads out into a small flattened triangular surface, the anterior angle of which projects forwards in the shape of a pointed process, to which the true vocal ligament is attached. The *outer edge* terminates inferiorly in the posterior external angle, and, together with it, forms the chief point of insertion for the muscles. To the angle are attached the tendons of the posterior and lateral crico-arytenoids, whilst the fibres of the thyro-arytenoid are inserted along the edge, almost as high as the apex of the cartilage. On the *base*, the chief points to be observed are the two angles already mentioned, namely, the *processus vocalis*, and the posterior external angle. The latter projects considerably backwards and outwards, and, scooped out on its inferior surface, is the articular facet of the arytenoid cartilage, which looks downwards and inwards, and is so formed as to fit upon the corresponding saddle-shaped surface of the cricoid. This joint is so oblique, that when the arytenoids are rotated upon it, they naturally approach each other in the middle line, so that their internal edges and vocal processes are brought into apposition. Owing to the articular surface being situated on the inferior aspect of the projecting posterior angle, the whole body of the cartilage extends forwards and assists in covering the opening of the larynx. The concave posterior surfaces being anterior to the articulations, it necessarily follows that the arytenoid muscle, to which they give attachment, must of itself be sufficient to pull the cartilages with their processus vocales together in the middle line.

The mechanism by which the true cords are approximated is thus comparatively simple. Three muscles are said to take part in the action. The arytenoid pulls the cartilages together, bringing their internal edges in contact, so as to close the so-called respiratory portion of the glottis; the thyro- and crico-arytenoids, whilst they assist the other, act more particularly by rotating the cartilages inwards, so as to bring their anterior processes into still closer apposition, and also to lower them in the cavity of the larynx. This last action must especially be accomplished by the fibres of the thyro-arytenoid, which, as already mentioned, are attached along the outer edge, almost as high as the apex of each cartilage.

It is not so easy to determine by what means the false cords are brought together. We have already seen that the point to which most of their fibres are attached posteriorly, is a pit about the middle of the anterior convex surface of each arytenoid cartilage, and, therefore, to the outer side of, and superior to, the insertion of the true ligaments. But this is not their only posterior connexion; another strong band of their fibres becomes attached to the apex of the cartilage of Wrisberg, a body which is too much overlooked by anatomists. Anteriorly, besides their thyroid attachments, they send upwards and forwards several processes to the edge of the lower thickened portion of the epiglottis. There is also to be observed, stretching between the margin of that valve and the superior border of each false ligament, in its whole length, a thin layer of muscular fibre connected with the aryteno-epiglottic muscle.

The cartilages of Wrisberg are contained within the aryteno-epiglottic folds of the mucous membrane, lying immediately in front of, and parallel to the inner edge of the arytenoid cartilage on each side. They are very slender, except at their upper end, where they form in the free edge of the aryteno-epiglottic fold, a rounded eminence, which is often mistaken for the apex of the arytenoid cartilage. "It," says Ecker, "is surrounded by mucous glands, from it along the false cords a horizonal process runs forwards, which one sees radiate between the elastic fibres of these cords."[1] In front of the inner edge of each arytenoid, the position of this cartilage is marked by a slightly prominent line on the mucous membrane, which extends downwards nearly to the level of the false ligament.

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[1] Ecker's Icones Physiologicæ.

As to the means by which the false cords are approximated, the thyro- and crico-arytenoids which lie parallel with them may, when they contract, tend to bring their free edges in contact; possibly also the cartilages of Wrisberg may bear to the false cords something of the same relation which exists between the arytenoids and the true vocal ligaments, the cartilages forming movable bodies, which can be approximated by muscular action. Our knowledge of these points is very unsatisfactory; the subject requires further investigation. But be that as it may, it is evident that if the muscles which bring together the false vocal cords act also during the production of the high notes of the voice, their influence as closers of the upper part of the glottis must then be counteracted by the fibres, ligamentous and muscular, which stretch between these cords and the margin of the epiglottis. For that valve being then, as we have seen, pulled strongly forwards, these fibres will draw the false ligaments upwards and outwards, and thus keep patent the interval between them.

III.—*The Mechanism of Voice.*

The great fact that the vibrations produced at the free edges of the inferior ligaments of the larynx are the primary source of the vocal tones, has been long since recognised by physiologists. Many of the minor questions, however, which the subject includes, such as the determination of all the different agencies which may tend to raise or lower the pitch of the notes, the special action of each of the muscles, the mechanism of the falsetto voice, are still involved in a great degree of doubt and obscurity. In the following remarks I shall first note shortly a number of phenomena bearing upon these questions, which may be observed in the living body; and secondly, I shall adduce such evidence as may be afforded by a series of experiments performed upon the dead larynx.

1*st*, When the laryngoscopic mirror is placed at the back of the throat, and the individual examined is desired to sound a vocal note, "the cords are seen to come together with surprising mobility,"[1] and their edges are thrown into a state of rapid vibration. In these circumstances it is to be observed,—(*a*.) That the vibrations during a low note are distinctly visible, but as the pitch of the voice is raised they become more and more rapid and consequently less distinct, until, in the high notes, the cords appear quite motionless. (*b*.) In no part of their posterior half are the vocal cords ever seen to come into actual contact. Even the points of the vocal processes of the arytenoid cartilages are separated by a narrow interval, which continues of the same size in the high notes of the true voice as in the low; but when the sound is made to pass from the true voice into the same note of the falsetto, the vocal processes distinctly approach each other, so that the chink between them is diminished. The epiglottis overshadows the anterior ends of the cords so much that it is impossible with the laryngoscope to tell whether they ever come into actual contact so as to cause the vibration to cease in that part of their extent. (*c.*) As the voice rises in the scale, both false and true cords are evidently more and more stretched, the epiglottis at the same time is seen to be drawn forwards and upwards towards the tongue, as already described.

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[1] Czermak.

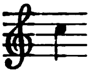
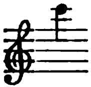
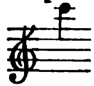
2d, If now an examination of the throat be made with the finger, it will be found that during the production of base notes the cavity of the pharynx is large and capacious, but in the higher treble tones its muscular walls are contracted more and more as the voice ascends, till the finger is felt to be actually grasped within them. This narrowing of the cavity may be observed to be slightly greater in the false voice than in the true, the pitch of the note remaining the same.

3d, The condition of the soft palate varies very much during phonation. In the production of low notes, it is raised so as to form a vaulted arch, the isthmus of the fauces is widely open, and the uvula is of its natural size, the levator palati seems the only muscle in action. In the high notes, on the other hand, the whole of the muscles seem to be violently contracted, the interval between the posterior pillars of the fauces is reduced to one-fourth of its natural size, the uvula disappears almost entirely, and the posterior edge of the palate may be felt with the finger to be quite hard and tense. The velum altogether presents an appearance somewhat like the roof of a house, its central line being much elevated, whilst its sides slope obliquely downwards, owing to the contraction of the palato-glossus and palato-pharyngeus. The elevated palate thus constitutes a fixed point from which the palato-pharyngeus may pull upon its other attachments to the wall of the pharynx and the alae of the thyroid cartilage.

4th, The position of the box of the larynx varies with every note. If the finger be applied over the pomum Adami, it will be found that, during the treble tones, the hyoid bone is pulled upwards and forwards, carrying the larynx along with it; and that finally, when the voice approaches its highest pitch, the thyroid cartilage becomes still further elevated, so that its sharp projecting angle engages itself behind the body of the os hyoides. In the production of the base notes, on the other hand, the box of the larynx is pulled downwards from its position of rest, and during the lowest tones the inferior edge of the hyoid bone becomes applied to the upper border of the thyroid cartilage. The distance between the highest and the lowest point to which the pomum Adami is thus capable of reaching amounts to about one inch. As the larynx rises, the width of the interval between the cricoid and thyroid cartilages becomes perceptibly diminished. At the moment of transition between the true and the false voice, this interval, according to some observers, opens slightly, and the thyroid cartilage at the same time is somewhat lowered; these observations were first made by Mr Bishop, who regards them as affording very weighty evidence in support of his own theory of the falsetto, but I cannot say that I have been able to verify them. Another important observation to be made is, that *during the highest notes the thyroid cartilage is constricted so that its width from side to side is less than it is when the larynx is at rest.* Any one may satisfy himself of this by measuring the box of the larynx between the finger and thumb. The following little experiments may illustrate the effects which this constriction must have upon the voice.

(*a*.) When the alae of the cartilage are pressed between the finger and thumb, and a high note at the same time is sounded, it will be found that on suddenly removing the pressure, the voice involuntarily falls several notes in the musical scale. In myself, I find that this pressure renders falsetto singing easier, so that with its aid I am able to take several notes higher than I can otherwise reach. (*b*.) An opposite experiment consists in pressing backwards with the finger the point of the pomum Adami when a low note is being produced. In this case, on suddenly removing the pressure, the voice at once rises several notes. (*c*.) When, during the very lowest note of my voice, I compress the upper part of the thyroid cartilage in the manner of the first experiment, I find that, whilst the pressure continues, the voice involuntarily alternates between the natural bass tone and a high treble of a somewhat falsetto character. The only explanation of this phenomenon which I can think of is, that the vocal cords have come in contact at opposite points, so that the glottis acquires the same pitch as if it were half closed. I may state, however, that I have succeeded with this experiment only as yet upon my own larynx.

In performing experiments upon the dead larynx, I have adopted very much the plan employed by Professor Müller. The first thing to be done is to fix the arytenoid cartilages, which may be accomplished by passing a needle transversely through their bases, and pulling them together by applying, on their posterior surface, around the projecting ends of the needle, a figure-of-eight ligature. When this is done with care, the vocal cords are found to be brought accurately together in the middle line, so as to be on the same level and to possess an equal degree of tension. I found it of great advantage to use the small semicircular suture needle, since its employment obviates the necessity of notching the alae of the thyroid cartilage, which must be done when the arytenoids are transfixed by a pin or awl, as recommended by Professor Müller. In so notching the posterior borders of the thyroid, one is very apt to detach altogether their inferior cornua, and after such an accident any experiments in imitation of the action of the muscles are of no value. I have generally preserved attached, in the following experiments, the epiglottis and the hyoid bone, since I have found that voice is more easily produced when they are present, owing probably to the support given to the vocal cords by the mucous membrane of the upper part of the larynx, which is then comparatively tense.

For convenience, the different musical notes will be indicated thus:—The note  will be marked C, and those above it up to  will be indicated like it, simply by the letters;  however, and its octave will be marked C^1, D^1, etc., whilst the octave below C will be marked B_1, A_1, etc., and that lower still as B_2, A_2, etc.

Experiment 1.—The larynx was that of a woman aged about fifty years. The cartilages were very little ossified. Attached were the hyoid bone, the epiglottis, and about three inches of the trachea. The arytenoids were fixed with a needle and a ligature in the manner just described, and a leather tube about five inches long was inserted into the opening of the windpipe. On supporting the larynx by the cricoid cartilage alone in a horizontal position, the note produced by blowing very gently through the tube was G. No difference in pitch was produced when the short tube was taken out and replaced by another a foot in length. By pressing backwards the thyroid cartilage, the note could be lowered to G_2; on the other hand, by pulling the thyroid forwards, the arytenoids being fixed, the pitch could be raised to G, so that the compass of the voice embraced two octaves. I could occasionally produce the note A, but it was of a screaming imperfect character. The effect of gently depressing the epiglottis, so as to have only a narrow opening between its margin and the arytenoid cartilages, was to lower the pitch one full tone.[1]

I next proceeded to test the effects of weights attached to the thyroid cartilage so as to stretch the vocal cords. With this object in view, I tied the free ends of the figure-of-eight ligature to a projecting piece of wood, thus suspending the larynx by its arytenoid cartilages. I then passed another strong needle through the angle of the thyroid cartilage, just opposite the attachment of the vocal cords, and to this, the larynx being held in a horizontal position, I suspended the weights with the following effects. The fundamental note being G_1, the addition of

1 oz. raised pitch to	G_1 sharp.	10 oz. raised pitch to	D
2 „ „	A_1	11 „ „	E
3 „ „	B_1	12 „ „	E
4 „ „	B_1	13 „ „	E
5 „ „	C	14 „ „	E
6 „ „	C	15 „ „	E
7 „ „	D	1 lb. „	G
8 „ „	D	2 „ „	A
9 „ „	D	No further note produced.	

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[1] Müller found this to produce a difference of only half a tone.

It will be observed that, as the voice rose in the scale, a greater and greater weight was required to produce each successive note. I was obliged also to increase the force in blowing almost in a similar proportion, for the gentle blast which produced the fundamental note and those near it, caused no vocal sound at all when a few additional ounces were suspended. At any time during the lower notes, the pitch could be raised by simply increasing the current of air independently of the increase of weight; but in each case, following Müller, I have marked the note produced by the gentlest possible current. With the view of showing how much the elevation in pitch is due to the weights alone, and how much to the increased force of the blast of air, I next made the following observations. Observing the note produced when a weight, for example one pound, was used, I suddenly removed it altogether, and marked the pitch to which the voice fell, the current of air remaining the same. The result was as follows:—

1 lb. = G : removed = C
8 oz. = D : „ = A_1
4 „ = C : „ = A_1 flat.

2. Keeping the parts in the same position, I next suspended the weights from the hyoid bone, with results identical with those of last table, except that after passing 11 oz. which produced E as before, a greater weight was required to obtain each successive note; 25 oz. being required to produce G, instead of one pound.

3. The larynx was that of a powerful man, aged about forty. The lowest note which I could produce with it by pressing backwards the thyroid cartilage was E_2. The arytenoids being fixed with a needle as before, I now attempted to imitate by weights the action of the *crico-thyroid muscle.* This was done by passing a string through the lower border of the thyroid cartilage on each side at the middle of that muscle's line of attachment. Tying each end of the string in this position, I suspended the weights from the intervening loop, whilst the cricoid cartilage was fixed, and the larynx was held in an oblique position, so that the direction of the string was the same as that of the fibres of the muscle. The following were the results:—

Fundamental note,		E_1	10	oz. raised pitch to		E
½	oz. raised pitch to	F_1	11	„	„	F
1	„ „	F_1	12	„	„	F
2	„ „	F_1 sharp.	13	„	„	G
3	„ „	G_1	17	„	„ still	G
4	„ „	G_1 sharp.	18	„	„	A
5	„ „	B_1	22	„	„ still	A
6	„ „	C	23	„	„	B
7	„ „	D	24	„	„	B
8	„ „	D	2 lb. or 32	„	„	C^1
9	„ „	D sharp.	No further note produced.			

The notes from G upwards were of a screaming imperfect character.

The following are examples as before of the effects of increased force in the current of air :—

1 lb. = G : removed = G
8 oz. = D : ,, = F_1
4 ,, = A_1 : ,, = E_1 = fundamental note.

4. With the same larynx I again applied the weight so as to imitate the action of the crico-thyroid, as in last experiment, but in this case, the string suspending the larynx was attached not to the needle transfixing the arytenoids, but to another passed for this purpose transversely through the posterior surface of the cricoid cartilage. The cricoid, therefore, and not the arytenoids, was the fixed point. Owing to the larynx having already been considerably used, the fundamental note produced on blowing very gently was now C_1, instead of E_1, as formerly.

Fundamental note, C_1	2 oz. raised pitch to D_1
1 oz. raised pitch to D_1	3 ,, ,, E_1

Here I was much puzzled to find that whilst when I blew with moderate force the note was E_1, the pitch rose to G_1 when I diminished the current of air, and this transition sometimes occurred even whilst the force which I employed in blowing remained the same. On examining the vocal cords, I found that the space between them became perceptibly wider and of greater length at the moment the lower note was produced. To continue the experiment :—

4 oz. raised pitch to G_1	6 oz. raised pitch to F (weak).
5 ,, ,, C	8 ,, No note produced.

These results are very different from those of last experiment. The curious alternation in the pitch which occurred when three ounces were suspended, and also to a less extent during the other notes, I attributed to the apices of the arytenoids being pulled forwards by the tightening of the false vocal cords, and of the mucous membrane. The slight traction of these parts, I supposed, might imitate to some extent the action of the thyro-arytenoid muscles, to be afterwards described, rotating the cartilages slightly inwards, and at the same time, depressing the points of the vocal processes so that the cords were tightened as well as approximated; on the current of air being increased, these effects were undone, the vocal processes were raised from below, and the cords were separated to the same extent as before. This is the only example of sudden and unexpected alternation between two perfect notes that I met with in all my experiments upon the dead larynx. Müller, who seems to have met with it frequently, speaks of it thus :—" If a slight tension of the ligaments is maintained, it depends upon the manner of blowing whether the note be of the ordinary tone or falsetto (the falsetto note being most easily produced by blowing very gently), and the two different notes thus produced may be very distant from each other in the musical scale, even so much as an octave."[1] In his experiments, Müller always fixed the arytenoid cartilages to a wooden board.

5. In examining the living larynx, we found that during the highest notes of the voice the hyoid bone was pulled strongly forwards by the genio-hyoid muscles, and the thyroid cartilage at the same time was drawn upwards and forwards behind it by the thyro-hyoid muscles. The object of the following experiment is to ascertain what effects the traction of these muscles, exercised in this direction, will have upon the voice. The larynx being once more suspended by the arytenoid cartilages, as in all the experiments except the last, it was held in an oblique position with its superior opening looking downwards. A string was then fixed to each side of the thyroid cartilage about the middle of the oblique line. To this the weights were suspended, the obliquity of the cartilage being such that the string, depending vertically, crossed its superior margin several lines posterior to the point of the *pomum Adami*. This I conceive to be the general direction of the muscular fibres when they are thus strongly contracted:—

Fundamental note =	D_1	8 oz. raised pitch to	B_1 flat.
½ oz. raised pitch to	E_1 flat.	9 " "	C
2 " "	E_1	10 " "	D
3 " "	F_1	13 " "	E flat.
4 " "	G_1	19 " "	F
6 " "	G_1 sharp.	24 " "	G
7 " "	A_1	2 lb. "	G

It must always be borne in mind that in this experiment the arytenoid and cricoid cartilages were fixed and immovable, so that the weights exercised their whole force in pulling forward the thyroid cartilage, whereas, in the living body the muscles raise the larynx *en masse*. But making due allowance for this difference, it will still be admitted that the thyro-hyoid muscles in thus acting upon the larynx must tend in some degree to separate the upper part of the thyroid from the arytenoid cartilages, thus stretching the vocal ligaments, and consequently raising the pitch of the voice.

6. In any larynx prepared for vocalization when the apices of the arytenoid cartilages are simply pressed forward with the point of the finger, the effect is to raise the voice in a very remarkable manner. By this simple means I could frequently produce the note G, the highest in last table; and it may be remarked that the vocal sounds thus obtained were always very powerful, though of a somewhat *punchinello* character. By resting weights upon the posterior surface of the cartilages, I attempted to estimate the amount of force required in this experiment, and found that—

Fundamental note being	C_1	4 oz. raised pitch to	E_1
1 oz. raised pitch to	D_1	8 " "	F_1

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[1] Müller, Physiology, vol. ii. p. 1013.

There was, however, great difficulty experienced in applying these weights accurately; and it was found that by properly directed pressure with the finger, more striking results could be obtained, even when much less force was employed. The cartilages on being pressed forward were observed to rotate slightly inwards upon their articulations, so that the vocal processes became more closely applied to each other, whilst at the same time they were slightly depressed within the cavity of the larynx. The vocal cords were thus actually stretched from before backwards as well as approximated, and owing to their being brought into actual contact posteriorly, the length of the chink through which the air passed was diminished.

7. Exactly the same effects were produced upon the voice by pressing the arytenoids together between the finger and thumb.

8. Simple lateral compression of the thyroid cartilage was also productive of the same effects, but the notes in this case were soft and weak, instead of being loud and shrill as in the last two experiments. In one larynx I could by this means elevate the pitch to C^1. In this experiment, as in the two preceding, the glottis was observed to be constricted, so that the cords vibrated only in part of their extent. The space between the alæ of the thyroid being wedge-shaped, another effect of their compression was to force backwards the cricoid cartilage, so that the vocal ligaments were tightened.

9. The larynx was that of a man aged about thirty years. In this case the hyoid bone and epiglottis were removed. I also dissected away those muscular fibres of the thyro-arytenoid which lie parallel to the direction of the vocal cord, and within the angle of its free edge, my object being to observe the effect of isolating the cords as much as possible. The result was that extreme difficulty was experienced in producing any vocal sounds at all. When, however, I supplied the place of the muscular fibres just mentioned by small soft rolls of wet paper, the musical tones were produced with almost as much ease as in the other experiments. This observation points out, I think, one function of the thyro-arytenoid muscle, namely, that of supporting the vocal ligaments when their free edges are in a state of vibration.

10. A tube about fifteen inches long furnished with perforation like that of a clarionet was affixed to the upper part of the larynx in such a manner that the connexion between them was air-tight. On producing the voice in these circumstances a difference only of one full tone was observed between the note sounded when all the perforations on the side of the tube were left open, and that obtained when they were all closed with the fingers. This is in accordance with the experience of Müller, and in opposition to the theory of Bishop—the vocal-tube theory.

11. The effect of simply increasing the current of air from the gentlest to the strongest blast that could produce a note was to elevate the pitch generally one-fifth, rarely one-sixth, and

sometimes only one-fourth. This also accords with Müller's observations.

12. Before concluding the experiments from which I have thus given a selection, I had acquired a command over the dead larynx sufficient to enable me to perform upon it a variety of slow airs, not very correctly, but still in such a manner that they could easily be recognised by my audience. In doing this I could employ at pleasure one of four different methods of raising the pitch:—

1st, By pulling forward the thyroid cartilage, as in the first experiment;

2d, By pushing forwards with the point of the finger the arytenoid cartilages, as in the sixth experiment;

3d, By pressing the arytenoids together between the finger and thumb, as in the seventh experiment;

4th, By compressing the thyroid cartilage laterally, as in the eighth experiment.

I always at the same time regulated the current of air so as to blow gently in the low notes, and more powerfully when I required to rise in the scale. The lowest base tones were invariably produced by pressing gently backwards the thyroid cartilage.

I now proceed to inquire if from these experiments any light is thrown on the many difficult problems connected with the production of voice. We have seen that in the dead parts there are three distinct methods by which the pitch of the voice may be elevated:—

1st, By tightening the cords;

2d, By increasing the current of air;

3d, By bringing the vocal ligaments partially into contact, so that they vibrate only in a portion of their extent.

In the living body it is universally admitted that the first of these is the chief means employed in raising the pitch of the notes. It is exceedingly probable that the second acts as an assisting agent, for we are conscious of using a greater effort in singing the high notes than the low, just as in the dead body we required to increase the current of air as the notes rose in the scale. As to the third method we are left in greater doubt. On the one hand the laryngoscope shows us that during phonation the vocal cords never come into actual contact in the posterior half or three-fourths of their extent, but owing to the projection of the epiglottis we are as yet uncertain of what may take place at their anterior extremities. On the other hand we find among Magendie's observations the following:—"I laid bare the glottis of a noisy dog by cutting between the thyroid cartilage, and the os hyoides, and I saw that when the sounds are grave the ligaments of the glottis vibrate in their whole extent, and that the expired air passes out in the whole length of the glottis. In acute sounds the ligaments do not vibrate in their anterior part, but only in their posterior; the opening is therefore diminished."[1]

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[1] Magendie's Compendium of Physiology, p. 137.

Moreover, we found that of the three means by which this constriction of the glottis may be artificially produced in the dead larynx (Experiments 6, 7, and 8), the only one which we could also employ in the living was the lateral compression of the thyroid cartilage, and in both cases this was observed to produce the same effect upon the voice. This lateral compression occurs naturally during the highest treble tones. It is therefore very probable, though it cannot be said to be absolutely proved, that in certain conditions the pitch of the voice is raised by a shortening of the vibrating portion of the vocal cords, owing to their anterior extremities having come in contact.

When compression of the thyroid cartilage occurs during the production of high notes, it must, I think, be due to the action of the palato-pharyngeus and the middle constrictor of the pharynx, the attachments of which are such that both of them, when contracted as they are in these circumstances, must pull the upper parts of the alæ towards the middle line; this action is favoured by the box of the larynx at the same time being carried forwards along with the hyoid bone.

The *falsetto voice* has been explained by supposing that during its production the vibrating portion of the cords is shortened in the manner just alluded to. This is the opinion of Bishop, Willis, and others; and the supposition seems a very feasible one. It is also favoured by some of the facts which I have observed. It was noticed for example that during the transition from the false voice to the same note of the true, the vocal processes became somewhat more closely approximated. In the same circumstances the muscles of the pharynx were more strongly contracted. If this contraction be really the cause of the lateral constriction of the thyroid cartilage, as just explained, we see at once the means by which the vocal cords are thus partially brought into contact. I hesitate, however, to conclude from these limited data that the cause of the falsetto voice is the lateral constriction of the thyroid cartilage, the more especially as I find Müller ascribing to it in his experiments upon the dead larynx exactly an opposite effect. "The deepest note," he says, "which I could produce in one of my experiments by relaxing the vocal cords was the middle C of the base clef; by exercising slight tension on the cords, and blowing with greater force I could produce the octave above this (C^1), but I could in that way raise the notes no higher. By compressing the larynx laterally, however, about the situation of the vocal cords and below them, I was able to produce a series of higher notes to the extent of another octave (C^2), without any falsetto tone, although under other conditions falsetto notes could be produced from the A sharp, below the second C (C). The prevention of the falsetto notes, which was here attained by the lateral compression of the larynx, seems during life to be effected by the action of the thyro-arytenoid muscles."[1]

It astonishes me to find Müller speaking so confidently of distinguishing the true and false tones in the voice of the dead larynx. In my own experiments I never succeded in doing so; I even found that very little difference could be observed between the sound of the male and of the female larynx, further than the fact that the voice of the former was set several notes lower than that of the latter. The absence of the peculiar characteristics in both cases I ascribed to the removal of the pharynx and the other parts of the "vocal tube." From the observations which I have just mentioned, and from the fact that by artificially compressing my own larynx, I am enabled to add to my falsetto register several notes which I cannot otherwise reach, I have been led to adopt the opinion of Bishop and Willis, namely, that the falsetto voice is produced by a shortening of the vibrating edges of the vocal cords, owing to their having come into actual contact anteriorly; and this I believe to be due in part at least to the constriction of the thyroid cartilage by the palato-pharyngeus and the middle constrictor of the pharynx. This theory accounts for the height of the notes which we are able to produce in the falsetto voice without any great muscular effort, whereas, their soft throat character is probably due to the sounds having been made to pass through the greatly contracted pharyngeal cavity.

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[1] Müller's Physiology, page 1015.

With reference to *the action of the thyro-arytenoid muscle*, this is a question much disputed by physiologists. On the one hand it is maintained by Mr Willis, and most other English writers, that by its agency the low notes are produced, whilst, on the other, the opposite action has been ascribed to it by some of the German authors, namely, that of elevating the pitch of the voice. Now, in my experiments upon the dead larynx, it was remarked that,

1*st*, Pressing forward the arytenoid cartilages has always a most marked influence in raising the pitch. Exper. 6.

2*d*, Pressing backward the thyroid operates with equal certainty in lowering the notes.

As the muscle therefore stretches between the thyroid and arytenoid cartilages, the effect of its contraction upon the voice will depend entirely upon which of these is the fixed point. A little experiment upon one's own larynx will show at once that it is an easy matter to press back the thyroid cartilage during the production of low notes, so that if the muscle acts in these circumstances it can have little difficulty in approximating the upper part of the thyroid cartilage to the arytenoids. Its action, however, cannot be altogether favourable to the lowering of the vocal pitch, for in their contraction, those fibres contained within the fold of the vocal ligament near its free margin, must render somewhat tense the edges of the cords, thus destroying the laxity which is necessary for the production of bass notes; at the same time, the forward traction of the arytenoids with the consequent depression of their vocal processes must tend, so far as they go, to raise the pitch of the voice. It is therefore evident that if the thyro-arytenoid muscle is intended to produce low notes, it must act under most unfavourable circumstances.

On the other hand, let us suppose that its agency is employed in elevating the pitch of the voice. As the vocal tones rise in the scale, we observe that the larynx is pulled upwards and forwards by the thyro-hyoid muscle, and at the same time the lower border of the thyroid cartilage is pulled downwards by the crico-thyroid. *Between these two muscles the thyroid cartilage is thoroughly fixed*, and the thyro-arytenoid must, therefore, in contracting, produce its effects solely upon its arytenoid attachments; pulling them forwards, it must exercise the same powerful influence in raising the notes, as we observed was produced by pushing the cartilages from behind in the sixth experiment. Those of its fibres also contained within the folds of the vocal ligament will act by rendering the edges of these cords more tense, and at the same time by supporting them during their vibration.

There can be no doubt then that the thyro-arytenoid is one of the muscles which tighten the cords and raise the pitch of the voice. Ecker has thus expressed the German view regarding it. "When these muscles contract, their fibres lose their slightly wavy direction, thereby the free margins of the vocal cords approach each other; seeing that the *processus vocales* are drawn forwards, inwards and downwards, even to touching, so that only a small linear split remains. As the thyro-arytenoid muscles fill the fold of the vocal ligament nearly to its free margin, necessarily, on the contraction of the muscle, the free margin of the fold becomes sharpened. In this position the vocal cords are drawn as much as possible into the lumen of the air passage. Probably, they vibrate in their whole extent, and the chest-notes are produced."

We have as yet, I believe, no satisfactory explanation of the manner in which the lowest notes are produced. We know that the vocal cords are relaxed by the upper part of the thyroid cartilage moving backwards, but we are still in doubt as to the cause upon which this movement depends.

I cannot bring this paper to a conclusion without expressing my sincere thanks to Dr Grainger Stewart, and also to Dr Sanders, for their kind advice and assistance, and for the interest they have all along taken in the investigation of these very complex questions.

ARTICLE IV.—*Some Remarks on Cholera, with Reminiscences of the Epidemic of* 1832. By GEORGE STEELE, M.D., Montrose.[1]

HAVING reason to fear that erelong we may have another visitation of cholera in its malignant form, I have been led to think that it might not be without interest to make that disease the subject of this address. It is not my intention, however, to enter at length into the general subject of cholera, but to confine myself, at least in a great measure, to personal reminiscences of the epidemic, as it occurred in my own experience in the year 1832.

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[1] A paper read at the annual meeting of the Forfarshire Medical Association in July 1866, and published by request of the members.

At that time I was engaged in practice in the vicinity of Musselburgh, where cholera prevailed to an extent, and with a severity, unequalled perhaps in any other part of Scotland. Besides ample experience on the living, I had also an opportunity of making a considerable number of post-mortem examinations, the result of which showed morbid lesions having an important bearing on the pathology of the disease, and differing in some essential particulars from any observed by myself in subsequent epidemics, or which seem to have been much noticed by others engaged in similar pursuits. Some of these dissections were made along with the late Professor Lizars of Edinburgh, and some others with a French surgeon, M. Le Coste, from Montpelier. To these I will refer in a subsequent part of this paper.

The earliest writers on the healing art seem to have been acquainted with cholera. We have authentic records of its occurrence in India on several occasions during the last century, and in our own day, as is well known, it devastated Lower Bengal in 1817. It thence travelled east, to China; south, to Sumatra, Ceylon, and the Mauritius; west, to Persia and Astracan. There, on the confines of Europe, it halted; but, having broken out afresh in 1829, it resumed its westward course, and reached England in 1831. It is not at all probable, however, notwithstanding the strong assertion of some writers to the contrary, that this was the first appearance of the disease in this country, nor can I agree with those who hold that when it did first appear it was by having been imported. Sydenham, and others both before and after him, knew and described a cholera morbus, or "plague in the guts," between which and the disease of our own day it is impossible to discriminate; and cases, several of which proved fatal, and which were quite identical with those occurring at a later date at Sunderland, were met with in various places at a considerable distance from that town, and several months before importation could have taken place. Mr Greenhow, a very able practitioner in Newcastle, states, in reference to these, that the strictest inquiries respecting their origin failed to elicit the slightest evidence of their having arisen from any infected source, and prove in the most satisfactory manner, that in whatever way the disease may have subsequently extended itself, its commencement in this country was spontaneous. It was said, too, to have been brought to Haddington from Newcastle by three shoemakers, who had travelled on foot from the one place to the other, and who had spent a week upon the road; but the truth is, that it appeared in Haddington some days before the shoemakers themselves.

Without wishing to dogmatize on so intricate and mysterious a subject as the mode in which cholera diffuses itself, I may go the length of saying that considerable opportunities of observing have led me to believe that contagion is not at any rate a powerful agent in the process. I have never seen imported cholera spread widely, and in my opinion a few arrivals will never constitute the focus of a widely-radiating epidemic, unless there be existing in the locality some peculiar atmospheric condition favouring the propagation of the disease. What that condition is, I cannot tell. It remains concealed from the scrutiny of man. I do not go the length of saying that cholera may not, under certain circumstances, be occasionally transferred from one person to another, but much more frequently it either arises spontaneously, from purely local causes, or spreads in the epidemic form, probably under the influence of atmospheric and local causes combined, not depending for its progress on any contagious property. Further, I have seen the bedclothes and the earthen floor saturated with choleraic evacuations, and had no reason to suppose that the attendants upon the sick in the small and not over-clean houses of coal-miners were more frequently attacked than others in the same station of life. Indeed, so far from clinging to articles in houses, the inmates of which had suffered from the disease, or even lingering about localities, when cholera had left a place, that locality was considered, at the time to which I refer, to be of all others the most desirable for those residing in districts still infected to resort to for safety. I have seen mothers under cholera suckling their infants—the mother die, and the infant escape uninjured. Again, at Musselburgh in 1832, the first case occurred on the 18th of January. In Edinburgh the first cases were reported on the 27th of the same month; but at Portobello, lying on the public road midway between Edinburgh and Musselburgh, no cases were met with until the 18th of February, unrestricted intercourse between all three being meanwhile carried on. At a colliery village containing about four hundred inhabitants, cholera appeared in the end of January. It limited its ravages to those resident in a particular part of the village; there were nine deaths, and the disease disappeared. About a fortnight afterwards it broke out afresh in that part of the village which had previously escaped, and six died. In this second irruption not a single case occurred in the part first visited. These peculiarities are not easily accounted for on the principle of contagion.

It is not so much, however, by accumulating facts, like those I have mentioned, as by critically examining the very numerous and discordant statements already made, by instituting researches such as those of Schrœder, Pasteur, and Davaine, and by investigating the local and atmospheric conditions of places attacked and places spared, that we may hope to introduce at last some order into the present chaos. Yet, I have thought it right to bring under your notice those few facts out of many others which I might have adduced, supporting my view of the, at least, comparative innocuousness of contagion, for there are few influences which so terrify the vulgar, which so paralyze their energies, and even predispose to the disease as the state of mind induced by the contrary belief.

It is more than probable there are some now hearing me whose views regarding the contagious nature of cholera will not harmonize with mine, but whatever our views may be, we should make it our endeavour to allay popular panic by every means in our power. In my experience there have been comparatively few individuals who were previously in good health, who attended to personal and domestic cleanliness, and who lived well, but at the same time temperately, who have fallen victims to the disease.

I observe that the Medical Officers of Health of the City of London have recently issued a set of instructions, suggesting what should be done by public bodies in the event of another visitation of cholera. In these, which are otherwise excellent, they recommend the speedy interment of the dead. This recommendation I consider to be matter of regret. It has not been proven that any evil emanates from the dead body, and facts are not wanting which tend to prove the reverse. In 1832 as in 1848-9, the dissecting rooms were supplied with subjects dead of cholera ; and to the best of my knowledge, Dr Aitkin's statements concerning their innocuousness are as applicable to the former as to the latter epidemic. I may mention, that on one occasion, being engaged with a friend opening the skull, he allowed the saw to slip and run along my hand. It inflicted a pretty severe injury,—the consequence was, *nil.* While thus the dead body is probably not a source of danger, hurried funerals, especially if at midnight and by torchlight, as was the common practice at Musselburgh in 1832, are harrowing to the feelings of surviving relatives, and tend to create and intensify that popular excitement which is so much to be deprecated. It may not be out of place to refer to a circumstance which came under my own notice. A girl very ill with cholera was seen by another practitioner and myself. When he called in the evening, he was asked whether if death took place during the night the funeral might not be deferred till daylight. She did, to all appearance, die about midnight; the body was dressed, removed from bed and laid out in an adjoining room. About four in the morning one of the attendants going into the room imagined there were still signs of life. The child was returned to bed, had external warmth assiduously applied, rallied, and eventually recovered.

In the latter part of January my attention was withdrawn from the farther progress of cholera in Musselburgh, owing to its outbreak in my own more immediate field of practice. There a large portion of the inhabitants were coal-miners; and among them the disease raged with great severity. It did not disappear finally until the month of October, and afforded me an opportunity of witnessing from three to four hundred cases, out of which number about one hundred and twenty died.

Cholera varies in its mode of attack. Often the invasion is so insidious that the sufferer may be on the verge of imminent danger, while still unconscious that he is seriously ill. In almost every instance, however, if not actually in all, there is more or less of what is called premonitory diarrhœa. This is a symptom which, during the prevalence of an epidemic, should never be overlooked, for it is not merely the precursor of cholera, it is the first stage of the disease itself; and in this stage alone is it amenable to medical treatment. Along with the diarrhœa there will be detected an anxious expression of countenance, listlessness, uneasy sensations about the stomach and bowels, and some coldness of the extremities. If this stage be neglected, it may pass rapidly into that of collapse. What the symptoms of that condition are, I need not occupy your time in detailing, as those who may not have seen them can find them described in the ordinary treatises.* For a similar reason I shall not enter at length into an account of the various post-mortem appearances, but I am nevertheless anxious to call your attention to one feature which was very constant in the cases I examined, and which, though it cannot be without importance, has apparently either not existed or escaped the notice of writers since 1832. I allude to a singularly hyperæmic state of the sympathetic system and the pneumogastric nerves. It was not unusual to find congestion more or less extensive in every portion of the sympathetic chain of ganglia. The splanchnic nerves, the semilunar ganglia, and the solar plexus were the parts chiefly involved, and these not unfrequently were embedded in extravasated blood. The cœliac, renal, œsophageal, cardiac, and pulmonic plexuses exhibited morbid lesions of the same kind, but generally to a less extent. The neurilemma of the pneumogastric was frequently injected, and studded with ecchymosed spots; and in one case I found the phrenic nerve where it spreads out upon the diaphragm steeped in a large coagulum. In one case, also, Mr Lizars found the same nerve involved, its neurilemma in the thorax being "injected all the way to the diaphragm." I shall transcribe from my notes the appearances in only a single post-mortem examination, as they sufficiently illustrate what we were in the habit of seeing. The patient died in the stage of collapse.

"Over the superior ganglion of the sympathetic, on the left side, there existed an ecchymosed spot. On tracing the nerve into the thorax, the two first ganglia on the same side were tumid, and of a full ruddy colour, while on the right they were large and turgid. The remaining ganglia were more natural. The splanchnic nerves on both sides at their origin were covered by ecchymosis, and the thoracic ganglion of the right side, which gives off the last filament, was much enlarged. The left semilunar ganglion was natural in colour but tumid; the right had its neurilemma injected. The renal plexus on the left side was slightly congested; on the right it was ruddy and its branches resembled blood-vessels rather than nerves.

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* As the following observation has been verified in Montrose since writing the above, I may here transcribe it:—"I have observed in many fatal cases a return of the natural warmth of the body, and at first considered it a favourable symptom, but soon learned to look upon it, when accompanied with a clammy skin and no pulse, as an invariable forerunner of death. It seems to be an evolution of heat similar to what sometimes takes place in a corpse."

"Both pneumogastrics in the neck were healthy; the left, on entering the thorax, presented an ecchymosed spot; the right, where it gave off the pulmonic plexus, was so embedded in blood that it was impossible to trace its filaments.

"The phrenic, natural at its origin, after its arrival in the thorax, began to be accompanied by distinct vessels, which, on reaching the diaphragm had ruptured so as to produce a large patch of ecchymosis in which the nervous filaments were steeped." This condition of the phrenic, however, was, as I have said, not usual. The brain and spinal cord were in a state of extreme *venous* congestion; the sinuses gorged with black blood, and the Rachidian veins not less so. The other appearances were those ordinarily seen in cholera cases; but I observe the lungs are described as slightly congested, and not collapsing."

Since 1832 I have not seen the inflammatory signs just mentioned, but my opportunities of making dissections have been much fewer. Still it is sufficiently clear that, though they indicate a grave affection of the sympathetic, they cannot be the cause of the symptoms during life, which in every epidemic have been remarkably similar. Before proceeding farther I wish to call attention to the following case:—

"*Feb.* 20.—Maxwell Gordon was seized this morning with vomiting and purging. Tongue livid. Pulse at the wrist scarcely perceptible. Countenance collapsed. Eyes sunk, with livid areola. Lips livid. Hands, feet, and arms blue and cold. Severe spasms in legs; pain and contraction at umbilicus. He was bled at the arm; and when about six ounces of blood were withdrawn, he became sick and vomited, and the vein was closed. The blood, thick and dark, was obtained with difficulty. Five pounds of hot water in which twenty grains of tobacco had been infused were injected into the intestines, and caustic potash was rubbed over the spine from one extremity to the other.

"This man became progressively worse, and when evidently moribund was subjected to the influence of galvanism. An incision was made over the glosso-pharyngeal nerve, where one wire was inserted, while the other was applied on the epigastrium. He was kept under the galvanic stimulus for three hours. *A powerful effect was produced on the respiratory function. The air expired grew warmer, and his lips and whole countenance, which had been previously livid, became of their natural colour.* He died about an hour after the galvanism was discontinued."

In a second case, which, however, it should be mentioned, was equally hopeless with the first, I again tried galvanism, and again it was followed by restoration of the colour, but, after being discontinued, by death.

These facts point very directly to a paralyzed state of the pulmonary plexuses, and do not at all harmonize either with the theory that the obstruction to the circulation is due to the muscular fibres of the small arteries being thrown into a state of contraction, or with that other which would find its cause in the blood itself. Unquestionably, whatever may be the manner in which the paralysis brings about the pulmonary embarrassment, its effects are both aided and modified by the viscid state of the blood. But though dilution of that liquid by injections into the veins is attended with results similar to those produced by galvanism, and though the one appears to remove the obstacle presented by the nervous system, and the other that presented by the blood, the latter must have a stimulating as well as a merely mechanical influence. This view throws light on the state of matters in the abdomen. My experience does not embrace any of those cases in which death is said to supervene on algide symptoms before intestinal discharge or transudation occurs. But if such cases do actually exist, and therefore, if the paralysis of the pulmonary plexus can of itself prove deep enough to arrest the current of the blood, we are the more entitled to look for a like condition elsewhere in the sympathetic system. And such a condition, in my opinion, we do find in the solar and other abdominal plexuses. This opinion, strongly corroborated by the influence of galvanism in restoring their function to the thoracic viscera, likewise derives support from Claude Bernard's experiments. It is impossible at any rate when the disease has passed into the stage of collapse to view the discharges from the bowels as otherwise than mechanical, and it seems strange that they should ever have been regarded as vital secretions. "This implies," in the words of Hamilton Bell, "that secretion is excited on the most extensive surface of the body, when that surface is nearly or entirely deprived of arterial blood." Secretion may well be at an end when "animal heat has disappeared, the heart and arteries have almost ceased to act, and the blood in the veins is impeded or stopped." It seems certain that one channel by which the cholera poison is admitted into the system is the intestinal canal, and that the poison, in effecting an entrance, causes irritation and diarrhœa. It is also probable that another channel exists in the lungs, and it is not beyond the range of possibility that the poison thus admitted may at the outset of the disease cause diarrhœa of an eliminative nature. But as, if those two forms of diarrhœa be really more than conjectural, it is hopeless to discriminate between them; as all experience goes to show that if the former variety be arrested the disease will be arrested; and as there is little reason to expect much benefit from any mode of treatment with which we are as yet acquainted in the latter—and especially little from the plan which consists in contributing to the increase of a process whose own tendency is rapidly to go on to form a large element in the fatal issue—I think it under every circumstance right to treat the early diarrhœa with a view to checking it. I cannot but regard with extreme distrust the proposal of employing evacuants in the form of purgatives; and although this mode of treatment were much less objectionable, theoretically, than it is, I would not advise any one to place reliance on a doctrine so entirely at discord with the almost universal voice of experience.

There is, I believe, no disease in which the appliances of our art have been resorted to in greater variety, and with less success, than in cholera. When the epidemic first commenced in this country, the practice in which most confidence was placed was venesection, combined with the application of external heat, and the use of calomel, opium, mustard-emetics, and stimulants, the last being administered with no sparing hand. A brief experience sufficed to show that cases of a really formidable character were not amenable to these measures. Then succeeded, at a rapid pace, the advocacy and trial of innumerable other modes of treatment, each and all brought forward by their originators as successful in cases of the worst description. While one practitioner recommended calomel in large doses, and another in small doses, a third denounced it as being of all remedies the most immeasurably destructive. Besides emetics of mustard, those of common salt and tartarized antimony were by some resorted to. In addition to opium, we had camphor, capsicum, sulphuric ether, and phosphorus; salines by the mouth, by the anus, and by the veins; colocynth, croton oil in five-drop doses, acetate of lead, nitrate of silver, strychnia, enemata of tobacco, enemata of hot water, up to six or eight pounds, water of all temperatures, and no water at all. All bearing evidence to the melancholy truth, that when the symptoms are fully developed in a malignant form, the disease will run its own course in spite of every endeavour to arrest its progress. Should the epidemic again appear among us, we shall in all likelihood see the same tragic drama acted over again. The newspapers and professional journals teeming with accounts of successful cures, and old remedies, which former experience has found worse than useless, proclaimed to the world as specifics. In my opinion, the most successful treatment will be found to consist in doing our best to combat symptoms as they arise, carefully studying the features of each case, and adapting our practice to the character it wears. In our anxiety to do good, we should be careful to avoid doing harm, shunning a merely routine practice, and especially being cautious in the use of alcoholic or other narcotic stimulants in all stages of the disease; but particularly in that of collapse. In this stage nothing administered by the stomach can be productive of any good; and f reaction does occur while the stomach contains alcohol, opium, or her similar drugs, their effect will then come into operation, and the tendency to cerebral congestion which naturally supervenes in the reactive stage will be dangerously increased. In my own practice in 1832, I had several cases of severe sloughing of the gums, owing to calomel administered during the stage of collapse; and I witnessed one case where, after the choleraic symptoms had disappeared, death resulted from this cause alone. I have already noticed two instances in which I tried the effects of galvanism, and although the result in both was unsuccessful, I consider this agent deserving of farther trial. If tried, it should be continued moderately, and for a lengthened period.

In several of my cases saline injections into the veins were employed, the apparent good effects of which were immediate, and seemed little short of miraculous. The voice, previously an inaudible whisper, became natural; the sunken, livid countenance, and the corrugated skin, speedily assumed the plumpness and colour of health, the temperature of the body becoming considerably augmented. But, unhappily, as in accordance with the general experience of others, the improvement was very transitory. The injected fluid rapidly passed off by the intestines, and one patient only in whom the practice was adopted recovered. In that case phlebitis supervened, and I have no hesitation in stating that recovery would have been less protracted, and attended with less hazard to life, had the practice been avoided.

Phosphorus, I have given a trial to in several cases, and sometimes fancied it did good, and where the cramps were very severe, I often administered an enema, consisting of 20 grains of tobacco infused in four to six pints of warm water. This seemed sometimes to assuage the violence of the spasms. I have applied escharotics of various kinds, such as caustic ammonia, caustic potass, and others, along the whole length of the spinal column, without any benefit. I have had no opportunity of testing the effect of Dr Chapman's ice bag. Dr C. himself affirms that cholera may be completely averted, and when developed, cured by modifying the temperature of the spinal region.

At the commencement of my cholera practice, I had great faith in the efficacy of bloodletting, and tried it in numerous instances. In only two cases was its use followed by any improvement in the condition of the patient, and I have no doubt that in both of these an equally beneficial result would have been obtained by other and safer means. I have seen it almost immediately followed by fatal prostration, and would not now feel inclined to try it again.

The practice to which I finally resorted in 1832, and which I would be disposed to still adopt if again called upon to treat cholera, is as follows:—In the preliminary stage, that of choleraic diarrhœa, I ordered the patient immediately to bed, and there to be kept comfortably warm. With the view of, at the same time, allaying the intestinal irritation and promoting the secretions, I administered every two or three hours until the symptoms subsided, a pill containing a small dose of opium, calomel, and ipecacuan, with or without a little brandy, as the circumstances of the case might seem to indicate. This, followed by a mild aperient, was generally all that was required. When the disease was farther advanced and collapse threatening, I found the mustard emetic very beneficial, a table-spoonful in warm water being given for a dose, and repeated at intervals of half an hour, to the third or fourth time if necessary. It did not always excite vomiting; but whether it did so or not, its administration was in general speedily followed by a copious warm perspiration over the whole body, and an abatement of the bad symptoms. Along with these means was conjoined the application of sinapisms to the belly and of external heat, together with assiduous friction to the cramped limbs.

When the stage of collapse is completely formed, nothing I have tried has done any good. Sometimes, however, patients do rally from a condition which may have seemed altogether hopeless, and hence the necessity to which I have already alluded for caution during collapse in the use of diffusible stimulants.

When reaction has taken place, local congestions are apt to occur, the organ most frequently affected being the brain. These must be carefully watched for and treated by appropriate remedies, such as local depletion, counter-irritants, and the cautious use of evacuants.

ARTICLE V.—*On Dislocation at the Shoulder-Joint.*

By Dr G. HAMILTON, Falkirk.

I RECOLLECT reading, in an early number of the *Dublin Medical Journal*, a recommendation to employ a common house ladder in the reduction of this dislocation, the arm being passed through one of the compartments, and extension employed: and, although the alternative inconvenience of taking the patient into the open air, or of introducing the ladder into a house, has prevented me ever using it, I have always thought that the mode of operating there recommended has something to be said in its favour. For the following references to other authors who have employed or mentioned similar methods of reduction, I am indebted to Dr P. H. Watson of Edinburgh.

Heister, book iii. chap. vii.—*On Luxation of the Humerus*,—"Upon this principle we may judge whether the *Ambe* of Hippocrates be sufficiently proper or no, to be applied to this case; or the still more uncertain method of pulling and extending the luxated arm over a gate, ladder, or beam, by a couple of tall and strong assistants, in such a manner as to lift the patient off his legs, etc.; all which methods are handled at large by Paré in his Surgery, book xv."

J. L. Petit, on *Luxation of the Humerus*.—"*L'échelle* et *la* *porte* font souvent des contusions profondes sur les côtes, sous l'aisselle et dans l'intérieur du bras, le long des vaisseaux; et les contusions ont été plus d'une fois suivies d'abscès très funestes." He has even seen rupture of the axillary artery produced by this manœuvre. De la Motte also remarks, that it is essential to keep the body well over the door, so that the door may act directly upon the head of the bone. From want of attention to this he has seen fracture of the neck of the humerus produced; and J. L. Petit mentions another instance in which a like result occurred when a ladder was employed.

Malgaigne says, "Mais le talon lui-même offrant toujours un point-d'appui vacillant et sujet à fléchir, on chercha à s'en assurer un plus solide par divers procédés dont la plupart remontent au temps d'Hippocrate. En général on disposait sous l'aisselle une barre transversale ou quelque chose d'equivalent, et on laissait pendre le corps d'une côte, tandis qu'on tirait sur le bras de l'autre. Quelques-uns se servaient de la chaise thessalique, l'aisselle portant sur le dossier très-élevé de cette chaise. D'autres suspendaient le blessé sur le dernier échelon d'une échelle verticale, ou bien encore sur le haut d'une porte, suffisamment garnis de linges; et si le poids du corps ne paraissait pas suffire, une aide croissant les mains par dessus l'epaule saine y ajoutait son propre poids. On s'est pareillement servi d'un levier simple soutenu par des aides; c'est ainsi par exemple qu'en usaient White et Bromfield; et B. Bell rapporte que quelques chirurgiens de son temps se servaient tout simplement d'un rouleau de pâtissier. Ces procédés gardent encore des partisans de nos jours; et tout récemment Morgan de Bristol a ressuscité la chaise d'Hippocrate avec quelques modifications dont il sera question plus loin."

Morgan's Chair, a high-backed solid chair, the upper part of the back well padded. Patient seated, arm over the back of chair, extension made from the elbow, by means of a napkin applied as a laque round the arm, the ends tied in a knot, so as to enable the surgeon to place his foot in the loop, and then employ his whole weight if need be, to effect the reduction. "After several years experience, never failed."

B. Bell, chap. xl. section ix. p. 139, vol. 7.—"The method of reducing this joint by means of the ladder has been long known, but I hope not often employed. The dislocated arm being hung over the upper step of the ladder, to which height the patient must previously be raised, and being secured in this position by assistants, the seat on which he is placed is suddenly drawn away; by which the whole weight of the body falls upon the luxated joint, by which, we are told, the bone may often be reduced when other means have failed. The top of a high door is sometimes used for the same purpose. Whether the door or ladder is employed, that part upon which the arm is made to rest should be well covered with several plies of soft cloth or flannel."

About two years since, I met with rather a difficult case, in the person of a large-bodied and very muscular man, in which I took advantage of a huge arm-chair, with a strong high back, which I found in the house. On this I placed a pillow, for the axilla to rest upon, and with the assistance of two strong men I reduced the dislocation very satisfactorily. Another followed, shortly afterwards, where I had no suitable arm-chair, but where I found a common screen for drying clothes, and this, with the pillow, also did very well. In a third case, neither of these being at hand, I mounted the patient on a table, placed the axilla on a pillow on the top of a door, and succeeded equally well. About six months since, I had, unfortunately, to make personal acquaintance with this accident. In passing over a railway bridge, my horse took fright at a passing train, and came down with me. In stretching out my right arm to save myself, dislocation at the shoulder took place, of which I was immediately made aware by the ugly tearing sensation that occurred. Fortunately, a house was near at hand, in which I received shelter. Without losing a moment, I looked about for some suitable apparatus with which to effect reduction. Finding nothing better, I got a narrow table, on which I placed, on its side, a long narrow stool, such as is found in cottars' houses. On the top of this I had a pillow placed, on which I rested my axilla, my body being placed between the two feet of the stool. Two strong men, who were at hand, kindly lending their assistance, reduction was effected after a few minutes' traction. I was so much pleased with the results in these instances, that I was thinking of having constructed a suitable apparatus which I could keep by me for use in such dislocations, when I cast my eyes upon a set of painters' steps, which immediately struck me as precisely the article I wanted. I have used this now in three cases, and its use seems to me to give very considerable advantages over the modes of reduction generally employed.

The "steps" I use are 4 feet 10 inches high, and the moveable support should be fixed with an iron rod, and not with a rope, as is often the case, as the former secures a greater amount of steadiness. A pillow is laid across the top step, and the patient ascends as high as may be convenient, of course placing the axilla on the top of the pillow. One or two assistants now lay hold of the arm, drawing, at first, steadily outwards and slightly downwards, traction in the latter direction being gradually and cautiously increased by approximating the arm to the steps. Reduction, in all the cases I have had, has been effected easily, and even, if I may use the expression, elegantly, but none of the dislocations had remained unreduced for more than twenty-four hours. The great power that we here possess, however, seems to me to render it highly probable that, in cases of longer standing, this simple apparatus will also be found very efficacious.

The three agencies mainly to be relied on in ordinary cases of shoulder-joint dislocation are evidently extension, counter-extension, and leverage, and especially the combination of these. When the dislocation has remained long enough unreduced for adhesions to form, perhaps, also, the putting in practice preliminarily some such manœuvre as Sir Astley Cooper saw the Lancashire bone-setters use, where they rapidly whirled round the arm before attempting reduction, may be of importance to the operator.

In using the "steps," their height is very convenient for exercising extension, while the counter-extension required is made to a great extent by the weight of the patient's body, the rest being easily supplied by the foot of an assistant. The height, again, is very important in exercising leverage power, and its amount at command is enormous, and of course requires caution in its use. In laying hold of the arm of a person placed in position for experiment, I have the feeling that I could with ease, if I wished, produce either dislocation or fracture of the humerus. Here, also, the combination of these powers is easy and natural, simply by causing the assistants to approximate the arm to the steps. Almost all our best surgeons have dwelt upon the importance of employing leverage in these cases, and yet the usual modes of reduction supply this very inefficiently. The heel in the axilla, or the knee of an assistant, gives us but little; while, when the pulley is employed, leverage power, from the points of extension and counter-extension being fixed, is necessarily lost altogther. To remedy this, I recollect seeing Mr Liston, as he recommends in his "Operative Surgery," endeavour, with a towel under the patient's arm, to *lift up* the head of the humerus; but the power given by this means is evidently very slight compared with such leverage as can be got in using the "steps." With these, even should the pulley be used, leverage could easily be combined with extension, by gently moving the steps forwards; or, perhaps, this might be done more effectually and continuously by having wheels attached to the steps.

In brief, this modification of the usual modes of reduction of these dislocations, which I have proposed, seems to possess the advantages,—

1*st*, Of enabling the surgeon to dispense with his personal exertions.

2*d*, It gives an amount of power in extension and leverage limited only by a consideration of the resistance possessed by the tissues; and it also enables the operator easily and naturally to combine these powers.

3*d*, The position of the patient gives perfect freedom for the administration of anæsthetics, if such should be wished or required.

Part Second.

REVIEWS.

A Description of the Diseased Conditions of the Knee-joint which require Amputation of the Limb, and those Conditions which are favourable to Excision of the Joint, with an Explanation of the relative Advantages of both Operations as far as can be ascertained by Cases properly authenticated. By PETER CHARLES PRICE, late Surgeon to the Great Northern Hospital. Edited, with a Preface and Memoir of the Author, by HENRY SMITH, F.R.C.S., Assistant-Surgeon to King's College Hospital. Crown octavo, pp. 192. London: John Churchill and Sons: 1865.

PETER CHARLES PRICE, the author of this essay, died at the early age of thirty-two, leaving behind him a reputation already gained, of being one who, having done much for his profession, would have done more had he survived; and the character, even more enviable, of being one of the most lovable of men.

Published after the author's death, at the request of his family and friends, and edited by a very dear friend, himself one of the rising surgeons of the metropolis, this work appears under circumstances which might claim a very partial, even an indulgent criticism. To bait and worry a living author may amuse his friends and possibly improve himself; to criticise the book of one who has gone to "where beyond these voices there is peace" may wound those who remain, and cannot change a line. No such indulgence is needed here; for, notwithstanding the immense loss of being uncorrected by the author's hand, the essay is a most valuable contribution to practical surgery, and must always remain one of the chief, if not the chief authority, on the early history of excision of the knee-joint.

Before giving a brief analysis of its contents, one subject must, in justice to the author, be first touched on, though it is rather a painful one. The essay, as was well-known at the time, and is now fully detailed in the preface, was sent in to compete for the Jacksonian prize, and the long title which stands at the head of this article was the subject, lumbering enough, which was prescribed by the Committee of the College of Surgeons. Price was the only competitor, had special advantages to aid him in his researches, worked at the subject to the injury of his health, and then did *not* get the prize. No award was made, and the essay was returned to the author, on the ground that the conditions required were not fulfilled; the essay being rather one on excision of the knee-joint, than an answer to the questions proposed. Looking, as we now can do from the outside, at the intrinsic merits of the essay, the labour involved in its production, and the importance of the subject, we cannot sympathize with the award; still, in fairness, we must own that the committee had some excuse for their rejection of Price's essay. They seem to have desired and expected to receive a careful exposition of the principles which should guide the selection of amputation or excision in the treatment of disease of the knee-joint, and probably expected that the merits of each operation should be duly set forth and weighed with the accuracy and impartiality of a judge charging a jury. They received a dashing special pleading for excision, in which the necessity for amputation in most ordinary cases of disease of the knee-joint was almost entirely ignored, and the possibility of saving the limb by excision strongly set forth. Not only this, the author also collects every possible case in which the operation has been performed, and criticises with great boldness the method of operation and the after-treatment, in so far as defects in either explain want of success.

How very strong was the author's belief in the efficiency of excision as a remedial means, may be seen in the following extract: "It may be well at once to state what cases of diseased knee-joint may, with a fair hope of success, be submitted to excision. Practical experience of this operation has led me to the following conclusion on this point. I believe that there is scarcely a single affection of the knee-joint in a sub-acute or chronic stage, involving the synovial membrane, cartilages, and ends of the bones immediately included in the articulation, which may not, in the adult, and perhaps in the young subject, be treated by excision. Indeed I am not disposed to limit diseased action destroying the ends of the bones directly concerned in the composition of the joint, provided only a portion of the bone remains healthy, for I have quoted two cases, under Mr Fergusson's care, in which a considerable portion of the lower end of the femur was removed, in addition to that portion forming the joint; and also a case under the able hands of Mr Jones of Jersey, in which considerable portions of the tibia and fibula were removed at the time the joint was excised. There is, however, one form of disease which I have described under the head of 'diffuse strumous infiltration of the articular ends of the bones' which forbids the adoption of excision."

To such strong expressions of opinion, and to the so far one-sided character of this essay regarded as an answer to the questions proposed, we must look for the explanation of its rejection by the committee, rather than to any want of absolute merit, or any relative inferiority to previous Jacksonian Prize Essays.

The essay consists of four parts and an appendix. Part I., on the normal anatomy of the human knee-joint, contains nothing original, gives a brief intelligible account of the rough anatomy and more evident movements of the joint, though not by any means up to date as to the more transcendental points in its complex movements. Even in this section the author's surgical enthusiasm runs away with him, for, at p. 8, in the midst of an anatomical description, we are at once carried into the operation for excision and the extent to which the tendons and ligaments are in it disturbed.

Part II., which is a very long one (including pp. 12–157), gives a sketch "of the various diseased conditions of the structures comprising the knee-joint, which, under certain phases, demand a recourse to amputation of the thigh or excision of the articulation." While the pathological portion is neither very new nor very scientific in its arrangement, it is thoroughly practical. To this is appended a very carefully tabulated account of all the cases to which the author had obtained access in which excision of the knee-joint had been performed up to November 1860, including close upon 300 cases, with their results, and where it could be obtained a short history of some of the more interesting and important ones. This portion of the work must have involved immense labour and research, and is exceedingly valuable. How well fitted the author was by his opportunities for such a task, may be seen in the fact that he himself had witnessed more than seventy of the operations he describes (p. 48).

Part III.,—on the various methods in which the operation may be performed,—describes also the after-treatment, and discusses the results to be expected. It is plain and practical.

In Part IV. the relative merits of amputation and excision are contrasted, and excision praised in a manner which it must be owned does more credit to the author's enthusiasm and partiality than to his judicial powers. An appendix contains a detailed account of the seven cases in which Mr Price had himself performed the operation of excision.

Several chromo-lithographs by West, of drawings of diseased knee-joints by Dr Westmacott, add considerably to the value of the work, as also do numerous rough woodcuts, illustrating results of operations.

A slight but tasteful memoir of the author by the editor, and a photograph which recalls his fine forehead and pleasant smile, but has an almost painful expression of delicacy and languor, add much to the personal interest of the work.

The editor has enriched its pages with many short notes, some of which are of much value. We could have wished that his time had permitted either a table of contents or an index, perhaps both. A few typographical errors can easily be corrected in a second edition. One which occurs throughout may be noticed as it entirely loses the derivation of the word, gastrocnemius being invariably wrongly spelt, gastronemius.

On the Treatment of Enlarged Tonsils at any Period of Life without the Operation of Excision. By WILLIAM J. SMITH, M.B. Lond., Surgeon to the Islington Dispensary. Crown 8vo, pp. 55. London: Hardwicke: 1865.

THOUGH the above is the name given on the title-page of this little work, we find from the preface and from the cover of the book, that it must be regarded merely as the first part of a larger work on the Diseases of the Tonsils. This being the case, it might be right to suspend judgment till the whole had appeared, were it not that the point taken up in this first part is a limited one, and can be discussed on its own merits. The Pathology and Treatment of Chronic Enlargement of the Tonsils would have been a better title than the one which heads this page, and would catch the professional eye better even than the "Treatment without Operation" catches that of the public. On the pathology of enlarged tonsils, Mr Smith gives the following opinion:—

> "From an examination of a large number of cases, I am led to believe that . . . the majority presented indisputable traces of past or present rickets. Now, rickets is essentially a disease of infancy; and enlargement of the tonsils, one of childhood. In rickets, after the diathesis has become extinct, and this often takes place at a very early age, the normal shape of the bones may be restored; might it not then be that in many of those cases in which no recognised sign of rickets can be detected the tonsils owe their enlargement to this constitutional condition, it being, like the deformity of the bones, the local evidence of a disease that outlives the malady to which it owes its origin?"—Pp. 3, 4.

This extract is a fair specimen of the sort of hypothetical pathology of the work, and of the style in which it is written.

Under the head of Treatment, Mr Smith makes some most excellent remarks, condemnatory of the guillotine as used for the excision of tonsils, showing how exceedingly frequent is recurrence, after the thin slice has been shaved off the apex by these most inefficient instruments, and praises the results of the knife and vulsellum when properly used. He describes his own method of cauterization by potassa fusa, which (apparently used first only in cases where excision was impossible or difficult) seems to have pleased its inventor so much that now he uses it in preference to the knife. This method of applying it is detailed, and cases given. Whether the profession will be convinced of the superiority of caustics over excision remains to be seen; but to encourage Mr Smith, and to show him that he is not alone, we would refer him to the work of Richard Wiseman, Sergeant-Chirurgeon to King Charles II.: he cured tumefaction of the tonsils either by "abscission or by actual or potential cautery." By actual cautery,—"The late Mr Ed. Mol. attempted it on a Person of Honor by actual cautery through a cannula well contrived for the purpose:"[1]

"I applied," says Mr Smith in one of his experiments, "the cautery to the tonsil itself, having concealed the heated part in a non-conducting sheath, so that the patient might not be terrified by the introduction of a hot iron into his mouth."

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[1] Wiseman's Chirurgical Treatises, 3d edition, p. 223; London, 1697.

"The way by potential cautery is, by working with a caustick stone and other escaroticks fixt in such an instrument as may be sure to eat into them, without offending the neighbouring sound parts."— *Wiseman*, p. 324.

Wiseman, in his heart, however, really preferred abscision to caustics when he could get leave from the relatives of the patients; we hope also, as Mr Smith grows in years, he will inspire the relatives of his patients with more confidence, and be allowed more frequently to use the method which, doubtless, he prefers, the old Celsian plan,—of excision by a hook and a curved bistoury.

One piece of advice Mr Smith must accept; to be more careful in his correction of the press in his succeeding parts and editions: thus, in page 3, for diatheses we find diathes*is*; meatus audit*orus*, p. 9; membr*anum* *l*ympani, p. 10. Though, doubtless, mere typographical errors, such mistakes spoil the appearance of a scientific work.

A Ramble in the New Zealand Bush. By STANLEY L. HAYNES, M.D. Pp. 36. London: 1866.

THIS little work is an attempt, and apparently a very successful one, to convey, in brief simple language, an idea of the prevailing character of the vegetation of New Zealand, as contrasted with that met with in a woodland walk at home. The immense variety and enormous size of the ferns must give a peculiar character, both to the colour and outline of the woods, and the author's list and description of some of the varieties will make many a fern collector envious, and may even tempt an enthusiast to cross the ocean that he too may collect ferns in the bush.

The most extraordinary description in the book, so remarkable as almost to seem to the non-scientific reviewer a traveller's tale, may be given in the author's own words:—

> "The rata tree is said to have a most remarkable mode of commencing its existence; *on dit*, that the young plant begins in the head of a caterpillar, which buries itself before it dies (or is killed by its strange parasite), and so enables the young plant to obtain a legitimate and radical nourishment from the soil. . . I possess four specimens of this *lusus naturæ;* in three of them, the stem springs from the top of the caterpillar's head; in the other, it grew straight forward between the eyes; in one of them, two stems arise from the head. The caterpillars are three inches long, and half-an-inch in diameter, and are quite dry and brown, without indications of having become at all decomposed; *au contraire*, the true and false feet, the eyes and mouth, are well preserved."

To those of us who know Dr Haynes' accuracy and powers of observation, such evidence is incontrovertible. We recommend the subject as an interesting one to dermatologists who are fond of vegetable parasites.

Chclera in its Home. With a Sketch of the Pathology and Treatment of the Disease. By JOHN MACPHERSON, M.D., late Deputy-Inspector General of Hospitals, H.M. Bengal Army. London: Churchills: 1866.

On Epidemic Diarrhœa and Cholera: their Nature and Treatment. By GEORGE JOHNSON, M.D. Lond., Physician to King's College Hospital. London: Hardwicke: 1866.

The Antidotal Treatment of the Epidemic Cholera: with Directions, General and Individual, for the Prevention of the Disease. By JOHN PARKIN, M.D., F.R.C.S., late Medical Inspector for Cholera in the West Indies. London: Churchills: 1866.

IN spite of the frequent visitations of cholera to this country, and of its almost constant presence in some parts of India, our knowledge of its pathology and treatment is still very imperfect. Still, considerable advances have been made; and, in particular, the old routine treatment by opium and stimulants has been nearly abandoned. The authors of the works which form the heading of this article have all had considerable experience of the disease, and we propose to lay before our readers a short abstract of their opinions.

The first work on the list is by DR MACPHERSON, late of the Bengal Army, who had abundant opportunities of studying the disease, especially in the General Hospital of Calcutta. His work is divided into three parts; the first, special, treats of the etiology of cholera in its home in Lower Bengal; the other two are general, and consider the phenomena, pathology, and treatment of the disease wherever it may occur.

In India, season appears to have a more decided influence in the spread of cholera than in Europe; for although in Europe, but especially in France, the disease has usually been most severe during warm weather, there have been numerous and important exceptions. In India, however, the effect of atmospheric influences is very marked and constant. According to Dr Macpherson, "Dry air, with high temperature, and wide range of the thermometer, is most favourable to the development of cholera; while moist air, with high temperature and small range, is most unfavourable to it. Cold, and dry, and changeable weather occupy an intermediate place." While hot winds would not blow cholera away, a heavy fall of rain would often seem to check an outbreak. The cholera poison has probably a great affinity for water; and it is quite possible that heavy rain may wash it out of the air, and thus put it in circumstances in connexion with the soil by which it may soon be decomposed. Another point of some importance which appears to be established by the returns quoted by Dr Macpherson is, that "the two great endemic diseases of the country—fever and dysentery—are least frequent during the chief cholera season, and begin to increase at the season when cholera dies away."

With regard to the contagiousness of cholera, Dr Macpherson, while not denying it entirely, considers it as contagious to a very slight degree. He even seems to doubt whether the disease may be communicated by the excreta, for he says, "the sweepers who remove the excreta, and the washermen who wash the clothes, never suffered, although there was little or no employment of disinfectants." This is quite contrary to our experience in this country, for the disease has frequently seemed to be communicated by means of clothes which had been contaminated by the discharges of a cholera patient.

It has long been observed that persons arriving in a locality affected with cholera were more liable to suffer than the residents. In illustration of this, Dr Macpherson gives the following very remarkable figures:—

There were among the—	Deaths.
Fixed population of Calcutta by fever,	181
Non-resident „ „ „	70
Fixed „ „ by bowel complaints	292
Non-resident „ „ „ „	193
Fixed „ „ by cholera	174
Non-resident „ „ „	544

From this it appears that, while the mortality of the fixed population in Calcutta from fever and bowel complaints greatly exceeded that of the non-residents, in the case of cholera the proportion was reversed, the mortality from that disease among the non-residents being actually three times as great as among the fixed population.

Dr Macpherson next gives a graphic description of the symptoms of the disease; we need not, however, allude to it farther than to say that he "never knew a case in which there was not some vomiting or purging." This is an important statement, for Dr Parkes and others in this country describe such cases, and it is now maintained by many that the danger in cholera is great in proportion to the scantiness of the evacuations. Proceeding to treat of the pathology of cholera, Dr Macpherson traces the progress of opinion on the subject, and in particular, criticises the views of Dr George Johnson upon this point. The subject is doubtless one of very great difficulty, and our author's conclusions, though a little vague, are perhaps as definite as the circumstances warrant:—

"A theory that is to meet all the circumstances of the different forms of cholera, like one to meet all the phenomena of its diffusion, must be a very extensible one. Meanwhile, till one is found, it may be suggested, that the cholera poison, according to the quantity and the intensity of its dose, and according to the condition of its recipient, may either, as it usually does, attack the pulmonic circulation more slowly through the capillaries of the alimentary canal and the general periphery, or as it does more rarely, directly by causing obstruction of the pulmonic artery.

"Anything that can be said as to the mode of action of the poison on the nervous system is even more indefinite.

"We are after all brought back very much to the views of Rochoux and the Bombay Medical Board. We do not doubt the existence of a blood-poison, but as we do not know its nature (very possibly it may be a ferment, some nitrogenous organized body), so we cannot yet talk with precision of its *modus operandi;* and the assumption that there is a poison present does not necessarily tie us down to accepting only one method of its operation, nor to regard vomiting and purging necessarily as efforts of nature to eliminate a poison."

Dr Macpherson next passes on to the treatment of cholera, and begins by a consideration of the evacuant treatment. To this he is opposed, on the ground that, as the main danger of the disease is connected with the abundance of the discharges, anything calculated to increase them is likely to prove injurious.

His views on this point are supported, not only by his own experience, to which we are inclined to attach great value, but by arguments which cannot easily be set aside. In general, elimination in cholera, far from being deficient, is only too abundant. Very copious elimination in analogous diseases, instead of being beneficial, is invariably a sign of danger. The risk in small-pox and in typhoid fever is proportional to the copiousness of the eruption in the one, and to the severity of the diarrhœa in the other. In former days, the practitioner did his best to provoke an abundant eruption in small-pox, by enveloping his patient in flannel, by carefully excluding the access of cool air, and by administering warm drinks; and in the present day many practitioners, especially of the French school, encourage the diarrhœa of typhoid fever on the ground that by means of the alvine evacuations the peccant matters are got rid off; this plan of treatment in the two diseases he considers equally erroneous. Another argument to the same effect, Dr Macpherson thus expresses,—"I think too, that on the whole, secondary fever is commonest in cases of cholera where the discharges have been most frequent and longest continued. If this be a fact, it would be an additional argument against the use of remedies calculated to protract them." We would not therefore recommend the evacuant treatment, on purely theoretical considerations, however plausible these may be; we must have practical results to convince us that it proves successful.

We shall state very briefly Dr Macpherson's opinion of other modes of treatment. *Opium*, he considers of great value, especially in the fluid form, in the premonitory and in the early stage of the disease, while the pulse is good, and before the stage of collapse has been established. He says, "If I feel confident that I ever arrested a fit of ague by a full dose of quinine, I feel equally sure that I have averted many a case of cholera by a full dose of opium. In either case, one can only talk of the highest degree of probability —in such matters no absolute proof is possible." *Astringents,* chiefly as adjuncts to the opium, Dr Macpherson considers valuable in the premonitory diarrhœa; the most important are acetate of lead and nitrate of silver. *Stimulants*, may be useful "to renew a flagging circulation or to maintain the power of a failing heart." Alcohol is chiefly recommended in the early stage. When collapse has occurred, Dr Macpherson trusts most to diffusible stimulants; "ether and chloroform are both useful, especially with a view to the relaxation of spasm; but for keeping up stimulation throughout collapse, ammonia is the main stay. It may be given very freely throughout, and the particular shape in which it is administered is a matter of comparative indifference. The compound spirit of ammonia is a very convenient form." Of *venesection*, Dr Macpherson says, "On the whole, we do better to avoid it, although it is worth trying in cases where it is too late to attempt much by mere medicines." Regarding *calomel*, Dr Macpherson does not entertain a very favourable opinion; though he thinks the danger of inducing salivation by small doses of it has been rather overrated; he says, "unless it has a power of quieting the stomach, I know of no very positive indication for its use."

Dr Macpherson concludes this part of his subject by giving a resumé of his treatment of cholera, which we may briefly epitomize. In the premonitory diarrhœa, a pill containing one grain of opium and two of assafœtida; or two grains of sugar of lead with one of opium; or an equivalent amount of laudanum in brandy, aromatic water, or chalk mixture, may be administered, and repeated if necessary in two hours. The patient should lie down and keep himself warm, should use bland diluent drinks, and avoid solid food. Dr Macpherson is strongly opposed to the administration of evacuants in this stage. He says, "If there be the faintest suspicion of cholera, I cannot recommend the employment even of mild emetics or aperients. Less harm will probably be done by ipecacuanha or Gregory's powder than by any other medicines of these classes." No argument on *à priori* grounds can get over a statement of this kind coming from such a man as Dr Macpherson, supported as it is by the experience of many most distinguished and experienced practitioners, and we cannot therefore recommend the administration of emetics or aperients unless there is good reason to believe that there is present some cause of gastric or intestinal irritation. If the premonitory diarrhœa has not been checked and the characteristic symptoms of cholera have been established, Dr Macpherson still trusts for a time to opium, and prefers small doses of laudanum, as being most readily absorbed. Small repeated doses of chloroform sometimes quiet the stomach and relieve cramps. Stimulants are of use, in the form of brandy and water, champagne, ether, or ammonia. Small quantities of iced water, and pieces of ice are grateful to the patient. Heat should be applied to the surface, and frictions are useful in aiding the capillary circulation and allaying cramps. When collapse has fully occurred, drugs are of no use. Drinks must be given in small quantities to relieve thirst. The only stimulant which it is safe to administer, is small quantities of ammonia. When reaction sets in, the patient is to to be left alone so far as possible. Small quantities of fluid nourishment may be administered. The return of the renal reaction should be carefully watched. The secondary fever, if it occur, and various sequelæ, must be treated according to circumstances.

Such is Dr Macpherson's treatment of cholera, which it must be allowed is judicious, not endeavouring to force nature, but rather to assist her in her efforts to promote recovery. Certainly, it is only palliative; it does not profess to cure the disease; but until our knowledge of the pathology of cholera becomes better defined, or until a specific for it is discovered, we should be inclined to adopt it, liable of course to modification in different cases.

We can cordially recommend Dr Macpherson's book as the production of a clear-headed and scientific physician, who has had much experience of the subject of which he treats.

Dr George Johnson, the well-known writer on diseases of the kidneys, having tried almost every mode of treatment of cholera in the epidemic of 1854, and having found none attended with success, had recourse to an evacuant plan, and published a series of cases where the mortality was comparatively small, and in which almost the only remedy employed was castor oil. The little pamphlet before us consists of two parts; the first is a review of Dr Johnson's work, contributed to the *Saturday Review* by "a physician of the greatest authority and eminence;" the second consists of "rules for the treatment and prevention of cholera and diarrhœa." The first part consists of an explanation of Dr Johnson's theory of the disease; the second is, as its name imports, practical. We shall allude only to the first part, which contains the rationale of the treatment recommended, particularly as the second is almost identical with a paper reproduced in the periscopic department of the last number of this Journal, from the British Medical Journal.

Dr Johnson denies that the worst symptoms of cholera are due to the drains of fluid from the blood, and endeavours to show that this theory is inconsistent with the acknowledged facts of the disease. He lays great stress on the statement that the worst cases are those in which there is little or no discharge from the alimentary canal. He maintains that the state of collapse in cholera is very different from the exhaustion produced by loss of blood or a long-continued drain upon that fluid. The patient in cholera, though almost pulseless, may be able to go about, and there is no tendency to syncope. Where the patient rallies he does so at once, long before the impoverished blood could have been recruited. Alcoholic stimulants in collapse do not warm or invigorate; blood-letting sometimes gives marvellous relief.

Dr Johnson's own theory we shall give in the words of his reviewer.—

"Dr Johnson's view of this matter is quite original, highly ingenious, extremely interesting, and most ably supported. He tells us what are, unquestionably, the anatomical characters of that condition; the state, that is, of the internal organs as revealed after death under collapse—and they are very remarkable. The left chambers of the heart, which naturally receive, to transmit onwards, through the arteries, the blood that is traversing the lungs, are found to be nearly empty; while the right chambers and the great blood-vessel which conveys the blood towards the lungs, are gorged and distended by black blood. Following this vessel, called the pulmonary artery, into its subdivisions, they also are found to contain blood of the same dark colour. But the ultimate tissues of the lungs themselves appear unnaturally pale and bloodless. The stream of blood has obviously suffered arrest in the small arteries, just before it reached that wonderful network of minute channels which, being neither arteries nor veins, but intermediate between the two, are called capillaries. It is in these that the vital changes of the body are mainly transacted.

"The question then is—Why has the circulating blood stopped here, and by what means has it been brought to a stand? Were the arrest of motion due to gradual thickening in consequence of the continued abstraction of its liquid portion, it would be found stagnating in the capillaries, as well as in the arteries. It must be borne in mind that one characteristic symptom of cholera—that symptom which, irrespectively of the fatality of the disease, renders it truly a disease to be dreaded—consists in very painful cramps of the larger muscles of the body. These contractions, it may be assumed, are produced by the choleraic poison, just as we know they are producible by the poison of strychnine. Dr Johnson supposes that a similar spasm or cramped state of the muscular fibres which embrace, and by their natural contractions regulate the size of, the minute pulmonary arteries, is caused by the same choleraic poison, and bars these slender channels against the advancing blood. The thickening of the blood is a consequence, and not a cause, of the collapse. Precisely in the same way does a similar condition of the muscular fibres of the smaller air-tubes of the lungs constitute a fit of spasmodic asthma.

"Surely this seems a reasonable theory. It is founded on a true analogy; it is consistent with the symptoms noticed during life, and with the conditions discovered after death. We may, therefore, legitimately regard it, until fairly refuted, as a sound as well as a most ingenious and important theory. In truth, it derives strong confirmation from the fact that it unlocks, like the right key, the whole of the pathological intricacies of the disease. Thus the emptiness of the systemic arteries accounts for the extinction of the pulse at the wrist, for the cadaverous sinking in of the eyeballs and falling of the features, for the blueness and coldness of the skin, and for the absence of syncope. The circulation stops, not from debility of the heart, as in exhaustion, but in consequence of a direct mechanical impediment to the onward course of the blood. We can understand the impotence of brandy against this condition; and how, on the other hand, bleeding may help, both by relaxing the spasm and by unloading the distended right heart, to restore the circulation. Into this explanation Dr Johnson presses, plausibly enough, the singular effect of the injection of fluids into the veins of these patients. It appears that, to be influential at all, the fluids must be hot; and he concludes that they act chiefly by relaxing, through their warmth, the spasm of the smaller arteries. The blood then flows on again, and the symptoms of collapse are for a time removed. Again, the husky whispering voice is owing, not to muscular weakness, but to the small volume of tidal air in the respiratory currents. As but little venous blood reaches the lung tissue proper, there is but little demand for air to meet and decarbonize it. The respiration accordingly becomes shallow, and the vocal pipe, feebly blown through, refuses to speak. Under the temporary impulse of the warm injections, the voice regains its usual tone and note. Once more, there are chemical and less obvious changes which receive their explanation from this theory, and further attest its truth. The stream of blood through the pulmonary capillaries being greatly lessened, the supply of oxygen is proportionally reduced in quantity. Hence during the stage of collapse there is defective oxygenation of the blood and of the various tissues of the body, coldness and blueness of the surface, diminished exhalation of carbonic acid, and suppression, nearly absolute, of bile and of urine—the chief constituents of bile, urine, and carbonic acid being all results of oxidation. That this is the correct explanation of the suppression of bile and urine during collapse is rendered all the more probable by the curious fact that, when a nursing mother becomes the subject of cholera, and falls into collapse, the secretion of milk continues unchecked. Now the chief constituents of milk—casein, sugar, oil, and water—may be obtained from the blood without the addition of oxygen.

"If the doctrines advanced by Dr Johnson be well founded, it must be wrong to dam the choleraic poison and its products within the body. Even when those products have, in one sense, been separated from the system, they may produce highly noxious effects if they remain shut up in the stomach or bowels. Admitting, as we must, on the testimony of trustworthy observers, that a minute quantity of the morbid excretions swallowed with water may suffice to produce the disease, a large quantity retained, through weakness of the expulsive powers or otherwise, can scarcely be harmless. Rather may we expect that its expulsion will tend to liberate the patient from danger and discomfort; just as the opening of large abscesses, and the discharge of foul pus and imprisoned gases, are often seen to rescue, as if by magic, a sick man from apparently impending dissolution. If we understand Dr Johnson aright, he does not now, whatever may have been his earlier views, propose to excite discharges from the mucous surface of the digestive canal, so much as to facilitate the removal of matters lodged there, by emetics, by draughts of tepid water, or other diluents, or by castor oil, of which the action is both speedy and gentle. The recommendation of the evacuant plan must, after all, lie in its comparative success, and its worth will doubtless be put closely to the proof if the disease should again become prevalent in this country.

"The most plausible objection which has hitherto been offered to Dr Johnson's teachings is the allegation that the diarrhœa, which is always very frequent during an epidemic of cholera, and which, in most instances, is really a mild form or an early stage of that complaint, yields most readily to astringent and opiate remedies; and that many cases which might otherwise run spontaneously, or be hurried by aperients, into fatal collapse, are thus nipped in the bud. The accuracy of both these statements is impugned by Dr Johnson. Relying upon his own experience, which has been neither small nor carelessly gathered, and upon the corroborative testimony of not a few of his professional brethren, he affirms that both the duration of choleraic diarrhœa, and its tendency to pass into perilous collapse, are always less in proportion as the disorder is either left to itself, or discreetly handled with mild evacuant drugs. On this point, as on others, Dr Johnson's facts and reasonings are well deserving of careful and impartial consideration."

This theory is no doubt extremely ingenious; and were it true, the treatment based upon it would be rational. But we cannot consider the theory as established, and we do not think that experience has yet shown that the practice founded upon it is successful. Cases of cholera have recovered under every mode of treatment, and we are not inclined to attach very great importance to the success Dr Johnson met with in 1854, because his evacuant treatment was not adopted till towards the conclusion of the epidemic, when it is well known that cases become milder, and have a much greater tendency to recover than at the commencement. At the same time, as in the treatment of ordinary diarrhœa, an aperient often does good by removing the cause of intestinal irritation, so in *the very commencement* of cholera a mild aperient or an emetic may be very useful by relieving the alimentary canal of the presence of noxious or irritating matter.

Dr Parkin has had a higher aim than either Dr Macpherson or Dr Johnson in the composition of his book. His object is to describe an antidotal treatment of the disease. This antidote Dr Parkin finds in carbon, and more particularly in carbonic acid, and their power according to him consists in the property carbon possesses of arresting putrefaction, and neutralizing some of the products of that process. The mode in which these substances are to be administered is thus described:—

> "As it is absolutely necessary, that the medicine should be taken in a proper manner—for, otherwise, the patient will only be swallowing a simple solution of tartrate or citrate of soda, instead of a certain portion of carbonic acid gas—it may not be superfluous to point out what I consider to be the best mode of preparing the effervescing draughts.
>
> "Thirty grains of the powdered bicarbonate, or sesquicarbonate, of soda or potash should be put into a large tumbler, with a wineglassful of water; to which is to be added a dessertspoonful of any simple syrup, mixing the two ingredients together so as to form a homogeneous mass. Then take twenty grains of citric or tartaric acid, and dissolve them in half a wineglassful of water, when the solution is to be poured on the contents of the tumbler, and the mixture drank off immediately, *before the effervescence has subsided.* If more convenient, or when to be obtained, lemon-juice may be substituted for the citric and tartaric acid—in the proportion of two tablespoonfuls of lemon-juice to the same quantity of soda or potash. As the object in giving the syrup is to render the mixture more tenacious, and to prevent the gas escaping as rapidly as would otherwise be the case, it is not necessary, when the lemon-juice is used, to add any syrup.
>
> "Instead of the saline effervescing draught, soda or seltzer water may also be administered. One objection, however, which applies to these, and all other kinds of bottled, aerated liquors is, that during moments of anxiety and sickness, unless the patient and the attendant are well accustomed to the administration of such drinks, it is seldom that the draught is taken before a considerable part, or nearly the whole, of the confined air has escaped from the containing fluid. In this case, the remainder would be, in a great measure, useless; as, unless under pressure, water absorbs and retains but a small quantity of carbonic acid gas. This inconvenience may be obviated, to a certain extent, by putting a teaspoonful or two of syrup into the tumbler, before the bottle is uncorked. When a stimulant is required, a teaspoonful of wine or brandy can be used instead. For children and infants, the quantity will necessarily be less, and must be proportioned to the age. With the latter, and also with the former, when they hesitate or refuse to take the bubbling liquid, the solutions of soda and tartaric acid can be given separately—one after the other. The soda water should also be used for common drink, after the effervescence has subsided, as water will always retain its own bulk of gas.
>
> "In addition to the above, both the gas and the carbon can be employed in the form of enema, in the manner pointed out hereafter—the quantity being, of course, proportioned to the age of the patient.
>
> "At the first onset of the attack, when those symptoms are present which denote derangement in the stomach, without being preceded by diarrhœa, any

of the preparations which contain carbonic acid may be given, and be repeated every hour, until all unpleasant symptoms are entirely dissipated. The first dose has always, with me, given immediate relief, and the third at most, removed every symptom but that of a peculiar sensation of lassitude and languor.

"In the preliminary diarrhœa, a dose of carbonic acid gas should be taken every two hours. This, in general, is sufficient either to arrest the diarrhœa, or to change the character and appearance of evacuations. Should the relaxation continue, after the medicine has been taken three or four times—which is sometimes the case with particular individuals, suffering from debility, or exposed to external causes, as cold or damp weather—it will then be advisable to substitute the simple carbon, which ought to be continued until the purging has entirely ceased. The best and most efficacious way of administering the carbon, at this stage of the disease, is by enema—two or three tablespoonfuls of the powder being mixed with any convenient fluid, and suspended in it by means of the white of an egg; or, if preferred, a tablespoonful of the same preparation may be given by the mouth, and be repeated every two hours until the purging ceases. When, however, the charcoal cannot be obtained, or the patient objects to take it, which frequently happens, we may then substitute the carbonate of soda, given in half-drachm doses every hour, or the prepared chalk, as in the common mistura cretæ. These preparations never fail to remove the relaxation, *after* the administration of carbonic acid gas to the extent already advised."

We have brought Dr Parkin's treatment before our readers, although we cannot say that we have much confidence in it. Effervescing draughts have been often employed, and are frequently very grateful to the patient, but we do not think there is any proof whatever that carbonic acid is a specific. We cannot follow Dr Parkin through the account of the results of his treatment, but must refer any of our readers who are curious on the subject to the work itself.

Part Third.

MEETINGS OF SOCIETIES.

PROCEEDINGS OF THE EDINBURGH OBSTETRICAL SOCIETY.

SESSION XXV.—MEETING XIV.

13*th June* 1866.—Dr Burn, *Vice-President*, in the Chair.

I. NOTES OF CASES OF PLACENTA PRÆVIA AND INVERSION OF THE UTERUS. BY DR MANFORD OF INVERNESS. COMMUNICATED BY DR JAMES YOUNG.

Yesterday afternoon, on sitting down to put together from memory, and send to you, as requested, a few notes on a case of *inversio uteri*, which occurred in my practice some years ago, I was hurriedly summoned to Ross-shire to see a lady in labour (the wife of a clergyman), said to be dying. Her medical attendant, who sent for me, stated that she had been in labour since morning, that her pains were smart and accompanied with considerable hæmorrhage, for which he plugged, as he feared it was a case of placenta prævia, and had not before met with a similar case. I found the patient extremely exhausted, blanched-looking, with a weak voice and pulse, and exceedingly anxious to be delivered.

The pains were feeble and had all but left her. On consultation, and after administering some stimulant, I removed the firmly-applied tampon, found the os well dilated, and the placenta adherent nearly three-fourths of its circumference. I at once forced my hand through, separated the mass, and brought it away; when a fresh gush of blood followed. On pushing up the head, I searched for and got hold of a foot, then the knee, and effected version. After some little trouble the head was delivered, greatly assisted by getting the finger into the mouth of the child, which was dead, and appeared to have been so for some time. The uterus contracted well almost immediately after. Stimulants and beef-tea, and every attention possible paid to the comfort of the patient. This was the lady's seventh confinement and the only one abnormal.

Regarding the inversio uteri case, it was a first labour,—the patient under middle age, and attended by a midwife who urgently sent for me, as "she did not understand and never saw any case of the kind." I lost no time, and was at the bedside within ten minutes. I found her pale and blanched-looking, but perfectly conscious. On examination I was horrified at the appearance and size of the inverted uterus with the placenta attached to the fundus. I administered some stimulant, and at once removed the placenta, but failed after every possible means to restore the normal condition of parts. The poor woman retaining her consciousness to the last, sank within half an hour after my arrival. Little or no hæmorrhage followed the removal of the placenta. The parts were so tight and apparently swollen that it was found impossible to reduce. I charged the midwife with forcibly pulling at the funis, which she did not altogether deny, and I seriously spoke to her against a practice so common, I feared, with that class.

I have thus, as you may suppose, rather hurriedly given particulars of this case, so far as I remember,—I thought it right at the same time to mention the other more recent. I am fully aware that I have given nothing new to the Society, nor have I at present anything to offer. I can only promise, that should such, or anything very interesting or instructive, occur in my practice, I shall be happy to communicate it.

With regard to the case of placenta prævia, it went on for some time most satisfactorily under the care of her ordinary medical attendant, when I was again called in for an attack of puerperal fever and peritonitis, the result of some imprudence on her part. I am glad to say, however, that she is now quite convalescent, after a very narrow escape.

Note.—In case it may be supposed by any of the members that the subsequent attack in the placenta prævia case may have arisen from a portion of the placenta being left, I think it right to state that I took care at the time to remove the whole mass, and so far as I could judge of where my hand was thrust through; and no portion having afterwards come away, I assume that this was not the cause. The imprudence referred to, was her endeavouring to get up too soon, to assist nature when in a state of perspiration.

I think it right to report to the Society, through you, and I do so with much grief, the death, on the 16th, of Mrs S., the subject of my lately reported placenta prævia case, about a month after delivery. My last visit to her was on the 30th ult., in consultation with her ordinary medical attendant. The case was reported to me from time to time as going on favourably, and just two days before she died (rather suddenly and unexpectedly) this was done by her husband personally. I was anxious for a post-mortem examination, but the friends objected. The case terminated fatally, I believe, from pure asthenia, the result of severe and repeated ante-partum hæmorrhage, and subsequent peritonitis, etc., notwithstanding the usual treatment in such cases,—nutrients, stimulants, tonics, etc. I don't think I could do more should I meet with a similar and extreme case; and as I am aware the profession is divided in the management of such, I shall be glad to be favoured with the sense of the Society after discussion, as a guide in fortunately rare but very trying cases of the kind.

Dr Charles Bell considered it the best practice to turn the child before removing the placenta; and that only in cases of extreme urgency was the placenta to be removed before the child. In placenta prævia there should be the least possible delay; and so far as his practice went he never used sponge-tents in such cases.

Dr Moir advocated the same practice. He said, that Sir James Simpson had recently advised the separation of the placenta first, when hæmorrhage ceased, but he never had adopted that treatment, as he had never met with cases requiring any other treatment than his own. Dr Moir thought that the chances were all against the child when the placenta was first removed. He recommended the use of a sponge-tent in cases of hæmorrhage, especially in the early months of pregnancy, as it both plugs and dilates, and might be applied if necessary with perchloride of iron and glycerine.

Dr Keiller said the child did not necessarily die when the placenta was removed. 150 cases had been brought forward by Sir James Simpson, where removal of the placenta preceded delivery. Two of these cases occurred in Dr Nimmo's practice, and in one the child lived. Dr K. never had removed the placenta first, but he had seen it come away. In one case which he had seen with Dr Husband the patient was pulseless from hæmorrhage, and died.

Mr Pridie considered it the best treatment to turn the child. In one case the placenta was removed first; the patient died.

Dr Stephenson said that Dr Thin had removed the placenta first in one case, and the child lived, although nine minutes had elapsed between the removal of the placenta and birth of the child.

Dr Ziegler believed it to be the practice of Sir James Simpson to remove the placenta first in extreme cases only.

Dr Burn advised immediate turning. He recommended plugging of the vagina in some cases, and after an interval to turn the child. In one case, at five months, where there was great hæmorrhage from the position of the placenta, he plugged the vagina at night, and in the morning he found the os more open; it was impossible for him or Dr Keiller, who saw the patient, to remove the placenta. Uterine action supervened and the patient did well.

Dr Pattison mentioned one case where the child lived, although the placenta had been removed first.

SESSION XXV.—MEETING XV.

27th June 1866.—Sir JAMES SIMPSON, Bart., in the Chair.

I. *Dr Keiller* introduced a patient as showing a good specimen of supernumerary fingers. The peculiarity being that the child's father and the other children had extra toes.

II. *The Secretary* read a letter from Dr Manford, giving some further accounts of the case of placenta prævia which had been read to the Society at a previous meeting.

III. CASE OF VICARIOUS MENSTRUATION. BY DR MASON, AYR. COMMUNICATED BY DR KEILLER.

A very interesting case has recently been under my care, the particulars of which, together with some of the previous history of the case, I should wish to describe.

About the middle of March of the present year, I was requested by my friend Mr Haldan to see a patient whom he had been attending for two or three weeks, but from illness was unable at the time to continue his visits. The patient is a young lady, fifteen years of age, residing at a boarding-school in this town; her native place being Liverpool. On calling, I was furnished by the lady of the house with some of the previous history of the case, with which I think it would be better to begin.

When eight years of age, Miss —— first began to menstruate, and continued to do so regularly until eleven; menstruation then ceased, and did not reappear until she was thirteen, since when, up to the middle of February 1865, it continued regularly. At that time Mr Haldan was requested to see her, and found what appeared to be a large abrasion of the cuticle in the middle of the right cheek, suppurating in the centre, and inclining to bleed towards the circumference. This sore was exceedingly obstinate, refusing to yield to the local and constitutional treatment resorted to. As far as I can gather, dilute nitrate of mercury ointment, caustic, etc., were applied, and cod-liver oil and iron exhibited internally.

During the summer, Miss —— went to Liverpool, her face still unhealed, and, I believe, menstruation very irregular. She was then attended by a medical gentleman; but her face continued so bad that she did not return to Ayr until the winter. Her medical attendant in Liverpool used locally a solution of sulphate of copper, and covered the part with goldbeaters' skin. Of his constitutional treatment and other *local* applications, I am not prepared to speak with accuracy, as the young lady could give me no clear account of what had been used. From the time her face healed (which I think was in October) until I saw her in the following March, she menstruated every month, the discharge lasting six days each time, and being profuse.

When I saw her she had a large *patch* on her right cheek close under the lower eyelid, and extending from the outer border of the malar bone to the side of the nose, and about three-fourths of an inch in breadth. On examining it, it appeared as though the cuticle had *melted away*, and numerous little specks of blood were seen on the surface, which was quite wet with a thin serous discharge. An hour before I came, she exclaimed, "Oh, I feel another place on my face again," and *immediately* the above appearance was observed. The occurrence of these patches is accompanied by a severe burning pain in the part, lasting for two or three hours. Until very lately, she had not the slightest intimation beforehand that another place was about to break out; the suddenness with which they appeared being almost incredible. Latterly, I observed her lean her head upon her hands, and wear an almost anxious look; and on questioning her, she said she felt rather giddy, and in a quarter of an hour or less another place would break out. It is remarkable that these outbreaks *generally* took place about the same time each day—eleven A.M. Sometimes they occurred in the afternoon, but *by far* the majority at the time specified. As each day almost, some new patch appeared, I was very anxious to be present at the time they occurred, and learning the regularity with which they appeared at eleven in the forenoon, timed my visits accordingly. The next day, as I was dressing my patient's face, she exclaimed, "Oh, I feel a place on my arm." I at once turned up her sleeve, and there was a large oval patch, fully two inches in length and one in breadth, on her left forearm, presenting the usual appearances. Here I should mention that these patches assume two different aspects at the outset; sometimes the one and sometimes the other obtaining. The one at the outset appears like a dew of blood, the other has a greater tendency to a serous discharge ending in suppuration. Those that bleed most heal the soonest. But before the places heal (which generally takes place in five or six days), both suppuration and hæmorrhage often occur in the same place.

The hæmorrhage, I should observe, does not consist merely of the dew of blood referred to, *that* is only at the outset, but it is actual bleeding as from a cut, the blood sometimes streaming down the face or other part attacked. The worst place she ever had was on the chin; it did not heal for nearly four weeks, and suppurated freely, the bed-clothes in the morning being often soiled by the discharge, but it also at times bled considerably. As soon as one place was healed it broke out in another, or in the same place over again, some of them having occurred in the same place four or five times. It were tedious and useless to describe all the places that were affected, as all were so similar; suffice it to say, that her face was covered, her chest twice attacked, and both arms and legs.

For some time I was much at a loss to satisfy myself as to the true nature of the case, but finally came to the conclusion that it was vicarious menstruation.

During the course of her attack, I sent Miss —— into Glasgow to see Dr M'Call Anderson, and he formed the same opinion of the case as myself, and kindly suggested to me, in a letter subsequently, some alterations in the treatment, to which I shall presently allude.

While still suffering from this complaint, Miss —— had a severe attack of hooping-cough, which seemed greatly to aggravate the patches on her face, causing them to bleed freely. This, I have no doubt, was caused by the mechanical exertion during the paroxysms of coughing sending the blood to the face. At this time also she had frequent and copious epistaxis, generally after a fit of coughing, or after the retching thereby induced, and this *somewhat* relieved the parts attaked.

A few words now as to the treatment. When I saw Miss —— she was then using the solution of sulphate of copper to the original spot in the centre of the right cheek, but had not yet applied anything to the new place which had just appeared an hour before my visit. I sent for some oxide of zinc powder, and dusted it well over the part affected, and then covered it with goldbeaters' skin. To the original sore I continued the solution, and so could compare the effects of the two applications. The solution caused a good deal of smarting, which continued for some time after its application; but no inconvenience was experienced after the use of the powder. I tried the solution to some new parts, but it only seemed to aggravate them. The original sore was, however, healed by it, but this part from the first differed from all the subsequent ones, as it penetrated much deeper and suppurated very freely for a long time; it is the only place where any scar is left, and it is trifling. Each morning I removed the goldbeaters' skin that I had applied the previous day, and, after bathing the part with tepid water, carefully removed the scabs that had formed, so as to prevent the occurrence of cicatrices. The places that appeared on the chest and arms I treated somewhat differently. On their appearance I bathed them with cold water, and then applied glycerine, and dusted the oxide of zinc powder over it, so as to form a crust; the arms were then loosely bandaged. This plan succeeded admirably on the arms and chest, but did not answer well on the face. Very few scabs formed on the patches on the arms, and they did not bleed so much as those on the face, and healed much more rapidly. The parts affected on the legs bled freely.

Internally, she got cod-liver oil and the muriated tincture of iron, with liquor arsenicalis. Aloetic purgations were also exhibited, so as to keep the bowels freely open, especially at the time that *any* appearance of menstruation occurred. A hot mustard hip-bath and leeches to the insides of the thighs were employed at the suggestion of Dr M'Call Anderson, and I think with much benefit.

In conclusion, let me very briefly recapitulate some of the most striking points in this case.

In the *first* place, we notice the very peculiar appearance presented by these spots; the thin serous discharge with numerous specks of blood seen in some of them; and the copious dew of blood, followed by actual hæmorrhage in others.

Secondly, The instantaneousness of their appearance; the skin appearing perfectly whole and healthy one second, and melted away and bleeding the next. It being only lately that any giddiness betokened their appearance.

Thirdly, The almost uniform regularity with which they occur about eleven every forenoon.

Fourthly, The pertinacity with which patch after patch succeeded one another, and the obstinacy with which they so long refused to yield to the influence of remedies.

Miss —— has now been quite free from any spots for about six weeks, and no trace of them are to be seen, except when she gets heated or excited, and then the parts that have been attacked look very red. The original spot has left a small depression, but little noticed. And now comes a singular fact; and that is, that although healed and apparently well, her menstruation is not yet properly established.

During the period that I was attending her, she menstruated *one day every* *week* for four weeks, there being however very little appearance. Then a fortnight would intervene without any menstruation, and then it would begin again as before. And now that she seems perfectly well, I learn that the menstruation is still being carried on in the same manner, the discharge, however, each day of its occurrence being more copious. She is still continuing the cod-liver oil, and has resumed the iron and arsenic, which had been omitted for a short time. On calling two days ago, I was told that Miss —— had felt dizzy, and that some of the old spots on her face were looking red and angry; I accordingly ordered leeches to the insides of the thighs, and the threatened attack seems to have passed off. But until regular menstruation be established, I shall not be surprised at a recurrence of the attack.

Dr Keiller said that cases were on record where vicarious menstruation had come from the mammæ and underneath the nails. In one case menstrual fluid had come from the pharynx; the patient had never menstruated, and when she fell asleep, a peculiar gurgling noise was heard in the throat. In another case of vicarious menstruation, blood flowed freely from an ulcer on the foot, and in one case it came from the eye. Dr K. mentioned a case of a patient in Musselburgh who had no uterus, and never had menstruated, and yet she said she felt as if she *should be* unwell, and had the usual sexual desire.

Dr Charles said that vicarious menstruation had occurred in one patient from the forearm every month, and always from the same place. There was no other secretion.

Dr M'Cowan mentioned one case of vicarious menstruation where the blood came from a wart at the umbilical opening.

IV. ON MORBID CONDITIONS AND INJURIES OF THE SPLEEN IN THE PREGNANT AND PARTURIENT STATES. BY SIR JAMES SIMPSON, BART.

Sir J. Y. Simpson referred to three cases of fatal rupture of the spleen which had occurred respectively in the pregnant, parturient, and puerperal states. He pointed out the circumstance that, during pregnany, there is often, if not generally, an increase of the white particles of the blood,—or, in other words, a kind of normal or physiological leucocythemia. As in states of morbid leucocythemia, the spleen was often enlarged; so was it also occasionally in pregnancy. Perhaps it would be found in practice much more common than the silence of authors on the subject might lead medical men to suppose. It sometimes recurred in successive pregnancies. In one patient of his, the spleen became enlarged to a very marked degree in a series of successive pregnancies, and this splenic enlargement disappeared always after delivery. Her youngest child is now about ten years old, and during that time there has been no recurrence of the splenic hypertrophy in the mother. A certain amount of softening very frequently accompanies the hypertrophy of the spleen, and predisposes to the laceration of the organ under strong exertion and muscular effort, blows, etc. The first case of rupture of the spleen in a child-bearing mother which he saw was a patient of Dr Husband's. She began to show symptoms of fatal sinking shortly after premature labour set in, about the sixth or seventh month. On opening the body after death, the enlarged spleen was found lacerated, with effusion of blood into the peritoneal cavity. Shortly afterwards, a patient of Dr Wilson's, who had been delivered a week or two before, after making some unusual muscular exertion, complained of abdominal pain and sinking, and died. Rupture of the spleen and effusion of blood were found on dissection. The late Dr Cunningham of Currie delivered a patient in Edinburgh, using the forceps. He left very shortly afterwards to catch the railway train. The patient sunk and died within an hour or two. An inspection of the body was ordered by the law authorities when rupture of the spleen, and consequent effusion of blood were found to be the immediate cause of death.

Dr Burn stated that Sir James Simpson had seen a patient of his lately where the spleen was very much enlarged during pregnancy. The patient died soon after her confinement.

Mr Furley mentioned one case of a similar kind, where the patient died one hour after delivery.

Dr Charles, of Calcutta, said he had seen many cases of different kinds where the spleen during pregnancy became enlarged and indurated. In one case, the spleen of a male patient was ruptured from throwing himself suddenly back in defending a blow. At the post-mortem examination the spleen was found ruptured, and of a red-currant jelly consistence. Such cases were common even from false steps, or in going down stairs. He thought such accidents were more common in India than here.

Dr Wilson mentioned a case of ruptured spleen occurring shortly after delivery, which he had reported to the Medico-Chirurgical Society a number of years ago; and which he believes was reported in the Monthly Journal at the time.

Dr Ritchie, of Derby, said he had seen cases of rupture of the spleen associated with bronchocele.

Dr Keiller said that he generally found, in cases of splenic disease, that bleeding was difficult to stop, and he never advised leeching in such cases.

Dr Sidey mentioned one case of enlarged spleen during pregnancy, where rupture followed an act of overstretching, and the patient died.

V. INSANITY AFTER DIPHTHERIA.

Sir J. Y. Simpson called the attention of the Society to the occurrence of lesions of the mind and attacks of insanity as sequelæ of diphtheria. These mental attacks are much less common than attacks of palsy after diphtheria. They have the same characteristics as to the period of their occurrence, and as to their favourable prognosis.

SESSION XXV.—MEETING XVI.

11*th July* 1866.—Dr Burn, *Vice-President*, in the Chair.

I. CASE OF HYDROCEPHALUS, WITH VASCULAR TUMOUR. BY DR STEPHENSON.

Dr Stephenson remarked, that the special interest of this case was in connexion with the tumour found at the post-mortem. The child died of hydrocephalus; the disease presenting no special peculiarities worthy of remark, and seemed to be quite independent of the tumour. The following history was drawn up by his assistant at the hospital, Dr Knight. He had been unable to find any description of a similar tumour in the same locality.

George M'D., æt. 3, was brought to the dispensary at the Children's Hospital, on Wednesday the 16th May. Rather a delicate-looking child, with a large and somewhat "hydrocepalic-shaped" head. The scalp was covered with a yellow impetiginous crust, which had been "dry" for some time previous. The appetite had of late failed and got capricious; stomach very irritable, with frequent vomiting; bowels were rather confined; skin dry and cool; pulse about 108, soft and regular; pupils somewhat dilated, but contracted readily on stimulus. The child was seen at home and continued in much the same state for about a week,—the vomiting growing rather obstinate, but was relieved by sinapisms, sedatives, etc. Treatment was directed to removing the crust on scalp and restoring the secretion, while iodide of potass was administered internally. During following week, the condition of the patient was greatly improved; the vomiting ceasing and the appetite returning, while the child seemed much more lively. About the second week of June, the symptoms of an affection of the head returned, in more marked manner; slight convulsions occurred, and when the child was seen on the 14th June, it was confined to bed; the vomiting was as bad as before; the pulse was slow and irregular; the pupils unequally contracted, but no complaint of head, nor much restlessness. Convulsions set in on the 16th, and recurred at intervals till death took place on Sunday the 17th. Post-mortem examination forty-eight hours after death. Scalp dry and "leathery;" skull of ordinary thickness; *dura mater* injected and strongly adherent under occiput; anterior fontanelle not closed. The brain generally congested and soft throughout, especially the grey matter. The ventricles greatly distended and containing a very large quantity of serous-fluid; opaque appearance of arachnoid over base of brain; no tubercles found. The membranes lining the fissure of Sylvius were adherent throughout. Below the cerebellum, and lying between its lobes, was found a soft pulpy tumour, greyish in colour, of no regular defined shape, about the size of a walnut, and quite distinct from the brain substance, but slightly connected with the membranes. On examination by the microscope, it proved to be of a vascular nature, numerous small vessels being seen anastamosing with one another.

Dr Keiller stated that he had not met with many cases like Dr Stephenson's. He had seen one case at nine years of age along with Dr Haldane, where, on examination of the child's head, they discovered a tumour of a vascular character, somewhat mixed up with the brain matter, and a little fluid at the base of the cerebrum. The child had been occasionally convulsed, with complete opisthotonos. Dr K. had never seen any other case like it; he believed treatment by blistering did little good generally. Some cases recover, but when we have to deal with a scrofulous patient, it is generally hopeless. The prognosis is very difficult and uncertain. In one family he had met with one case of hydrocephalus where the child died. Another child suffered from the same disease and recovered. He believed hypertrophy of the brain was frequently mistaken for chronic hydrocephalus, when the head gets large and of a square shape and out of all proportion with the face, and yet many such cases continue quite well. Such cases have not the symptoms of hydrocephalus and yet may be complicated with convulsions.

Dr Burn was frequently in the habit of using croton oil, in cases of hydrocephalus, applied to the head. He lately attended a child which had strabismus and dilated pupils and convulsions, and recovered under the usual treatment. The child had a second attack and recovered.

Dr Main said he had seen some remarkable recoveries, but in phthisical constitutions little benefit resulted from any treatment. He had seen one case, where, after fourteen days of gastric irritation, the child became convulsed, accompanied with clenched thumbs, and other symptoms showing severe head disease; when, after a blister on the head and continued use of the iodide of potassium, along with secale, the child recovered. Dr M. had tried the plan of giving secale cornutum to diminish the blood in the spinal cord.

Dr Stephenson stated, that a patient suffering from pertussis became insensible and continued so for three months, and recovered.

Dr Balfour thought that, in all cases of suspected cerebral disease, the history should be carefully considered. When vomiting occurred in such cases, we should always regard it as a suspicious symptom; but it would be rash to infer the existence of tubercular meningitis unless there had been previously existing ill health, amounting it may be simply to malaise; for we all know that simple meningitis may be ushered in in a similar manner. On the other hand, the absence of vomiting in cerebral affections should always lead us to doubt regarding its being hydrocephalus, and should guard us against forming so gloomy a prognosis as would otherwise be justifiable. In one case of this kind which I attended some years ago, the little boy became quite unconscious, and lay with dilated pupils, passing fæces and urine involuntarily for the space of a month, and yet ultimately recovered entirely, and is quite well at this day. The treatment adopted consisted of blisters to the nape of the neck, and large doses of iodide of potassium.

Dr Cappie had seen one child, twelve months old, which had squinting, convulsions, thumbs turned in, with swelling of the head. The child recovered after the application of the blisters, and potassium internally: the size of the head also sensibly diminishing.

Dr Pattison said he had seen a patient lately, where the previous medical attendant had given up the case as hopeless, having all the symptoms of chronic hydrocephalus. He took measurements of the head, and followed out the treatment with iodide of potassium, and bandaging. The child lived, but became quite imbecile.

Dr Bruce knew of patients of this description getting quite well, as in one case of hydrocephalus, when the child lay for several weeks unconscious and recovered, but lost its hearing. The family history was good.

Dr Balfour said that, while the great fatality of cases of hydrocephalus must be acknowledged by all, there were some undoubted cases of that disease which did recover. He had witnessed such instances in his own practice, and he had no doubt that other members of the Society had also done so. As regards carpopedal spasms to which Dr Cappie had referred, he might state that the most marked instances of that disease which had occurred under his care were purely functional, and had all recovered except one, where a post-mortem examination, which Dr Clouston, now of Carlisle, kindly performed for him, revealed no appreciable morbid conditions in the brain or spinal cord.

II. CASE OF INVERSION OF THE UTERUS. BY DR JAMES SIDEY.

On the 20th of May, I was sent for to see Mrs G., who was five months advanced in pregnancy, and found her complaining of pelvic pain. On examination, the parts were all very tender, and the os uteri could scarcely be reached on account of extreme tightness. The pain continued till the 24th, when suddenly, without any faintness, there was a feeling of extreme distention and fulness, the abdominal tumour reaching above the umbilicus in the evening. Uterine pains came on, when a large clot was expelled, and within the neck, the placenta was felt firmly adhering; no more hæmorrhage however occurred. On the 26th, the uterine pains again recurred, and the fœtus and placenta were expelled very much blanched, except the portion which had evidently adhered to the neck and lower part of the uterus. On examination, a large tumour was felt, which proved to be an inverted uterus caused by a fibrous tumour forcing its way through the os. Two fingers of the right hand were passed upwards on the rough surface of what appeared to be the fundus, at the same time pulling the tumour up with the other hand until an os appeared to have been formed, and the uterus assumed a natural state. Since then she has done well.

Dr Keiller thought such cases very rare at so early a period of pregnancy, especially in a first case. Dr K. mentioned a case of inversion of the uterus caused by the growth of a fibrous tumour, which tumour was removed by the ecraseur with almost no bleeding, but had failed entirely as yet to repone the inverted uterus. Dr Keiller spoke of several plans which had been proposed for operating in such cases. Dr Marion Sims, Sir James Simpson, and Dr Alex. Simpson had all proposed different operative procedures. The patient is now very anæmic, and forty years of age.

Part Fourth.

PERISCOPE.

PRACTICE OF MEDICINE.

REPORT ON THE EPIDEMIC CHOLERA WHICH APPEARED IN THE AGRA CENTRAL PRISON IN JULY 1861.[1]

By Dr G. R. Playfair, Civil Surgeon, Agra.

Having had medical charge of the Agra Central Prison from the 1st to the 19th July inclusive, during the absence on leave of the Superintendent Dr W. Walker, I am anxious to report on the epidemic cholera which commenced on the 6th of July, and was treated by me till the 20th ot the same month, as in a proportion of the 122 cases admitted during that period I employed a practice which I had twice before followed with considerable success, and in the present instance the results are strongly in its favour. Future experience must prove whether they would be equally so in every type of cholera. This disease being so fatal and so little understood, it is scarcely necessary to apologize for bringing to notice any method of treatment which appears to give better results than others, even although the reason of its success may not be clearly understood. I have now had opportunities of observation during five cholera epidemics, two of them among Europeans, I have also seen a great number of cases in private practice, and I am convinced that there is an early stage of true cholera which yields to prompt and vigorous treatment. I have never been able to determine what is the longest period of the existence of this early and curable stage, probably its very first symptoms, want of appetite,—aversion to food,—feelings of depression and fatigue—are frequently overlooked, but I can state positively, that I have frequently seen cases which within half an hour from the first seizure (and without any previous diarrhœa) have passed into the second stage, that of collapse, which is usually so fatal.

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[1] Dr Playfair's report came into our hands shortly after it was printed at Allahabad. Our readers, under present circumstances, will peruse it with interest, as describing what appears to us a rational, and has proved a successful plan of treatment.

The first stage of cholera commences with a feeling of depression, a sensation of relaxation in the abdomen, alternating with a sensation of twisting and cramps, there is a loose motion natural in colour, quickly followed by others, each more loose than the preceding, there is at the same time nausea and vomiting, first of the contents of the stomach and afterwards of a watery fluid, at last both ejections and dejections have that appearance so well likened to "conjee-water." When these characteristic stools are established, the case most probably is fully merged into the second stage.

It is during the first stage, before the patient has decidedly entered the second, that a strong stimulant with some opium and Cayenne pepper does, in a majority of instances, check the disease. Sometimes even if the stage of collapse has recently commenced when the patient is first seen, viz., the eyes more sunken than in health, the extremities cold as far as the wrists and ankles, thirst present, and the face bearing an anxious expression, a strong stimulant may suffice to arrest the disease, if the patient be neither a drunkard nor an opium eater. The strength of the stimulant to be administered must be proportioned to the age and habits of the patient. In gaining my first experience of cholera, I was on board ship alone, without even the assistance of an apothecary or compounder, in medical charge of upwards of 200 European soldiers, volunteers, old residents in India, men to most of whom a plain glassful of raw rum had no "nip," and who were in the habit of mixing chillies with their spirits. I was obliged to treat them with rum mixed with a very strong infusion of Cayenne pepper, cloves, cardamoms, and other aromatics, giving a large wine-glassful for a first dose. In private practice, I find brandy most easily procured, and perfectly efficient. The quantity must be proportioned to the condition of the patient; usually half to a whole wineglassful of brandy for an adult, with 20 drops of laudanum and a small pinch (2 grains) of Cayenne pepper in half a tumbler of very hot water, suffices to remove all the symptoms. After taking the dose it is essential that the patient should lie down, and remain quiet in a darkened room. To a child of six or eight years old, I would administer a dessertspoonful of brandy, 5 drops of laudanum, and half a grain of Cayenne pepper, in hot water. In treating children still younger, I substitute peppermint oil for the Cayenne pepper, and give a suitable quantity of opium and brandy. I repeat, that cholera, if seen in an early stage, and treated promptly, is generally under control. It is in this stage that that admirable compound the cholera pill, essentially a stimulant, does so much good, and it is the only form in which cholera medicine could be conveniently and extensively distributed; but where it is possible, as in a prison, or barrack, or in private practice, a fluid stimulant is preferable, because being more speedily absorbed it acts more quickly.

The second stage, or that of collapse, is the period which is so fatal in cholera, too frequently resisting every variety of treatment, and it is for the treatment of this stage, that I particularly wish to bring into notice a remedy which I believe very much lessens the average mortality. I do not assume any originality,—the practice was first suggested by Dr Annesley; but the proper class of cases in which to use it have not been attended to, nor has the application of the remedy been understood. I have no theory of cholera to add to the innumerable guesses already made,—I do not even pretend wholly to understand how the treatment I have tried acts,—but as far as my experience extends, and when, from being in sole charge, I had an opportunity of trying it (viz., in two distinct epidemics in January and June 1845, and again in last July), I agree with Dr Annesley, when he writes "that venesection (in cholera) ought never to be neglected." In all cases of cholera which have passed the incipient stage of nausea, vomiting, purging, and sometimes abdominal cramps, and entered the fatal stage of collapse, one symptom is patent, some cause has weakened the force of the circulation, the heart has lost its power of sending the blood as far as the termination of the extremities, or sends it with diminished force, the arms and legs of the patient as far as the elbows and knees become cold, and the hands and feet are shrivelled and puckered. The pulse of the artery at the wrist is diminished in volume and force. The superficial veins are empty and flat, and appear like tape stretched beneath the skin. In the superficial veins of the head a totally different appearance is generally seen,—they are swollen, and twisted from the quantity of blood in them. In short, the heart's action is enfeebled and oppressed,—it does not receive the contents of the superior and inferior vena cava so quickly as is natural, nor does it send out the blood from its left cavities with sufficient force to pass, in the extremely distant capillaries, from the arteries into the veins,—hence the loss of animal heat, the coldness of the skin, the shrivelling of the extremities, the relaxation of the tissues, the copious sweats. What is the condition of the blood itself? It is black, thickened; and if a vein is opened, it oozes out like treacle.

In the very early stage of this stagnation of the blood, this enervation of the muscular power of the heart,—a powerful stimulant *appears* to suffice to increase the heart's action and remove the danger of the attack.—At a more advanced stage I believe a powerful stimulant to be equally necessary, but it does not now suffice of itself,—there is great resistance in the state of the blood, it will not move on, and to assist the action of the stimulant and lessen the resistance it is necessary to open a vein. In cases so treated, where the circulation is restored by the combined action of the stimulant and venesection, the probability of the patient's recovery is very much increased. Dr Annesley was the first to point out the necessity of blood-letting to relieve the congestion of the heart. The remedy has been tried by many both in England and India, and has never been reported as successful. This result, I believe, arises solely from ignorance of the proper method of practising it, and from the cases in which it should be tried having never been properly understood.

1st, It is useless to attempt venesection if no pulse is perceptible at the wrist.

2d, The object is not to deplete as if to relieve an inflammation, but merely to lessen the resistance to the action of the stimulant to the contraction and re-invigorated action of the heart.

I might quote numerous writers to show how much the object of bleeding in cholera has been misunderstood,—even Dr Annesley only vaguely mentions, "blood is to be drawn, a few ounces to thirty." I will only instance the practice of one of the most talented medical officers who ever came to India—the late Mr Twining—because he gives his cases in a clinical form, enabling one to particularize the usual amount of blood drawn, and from which he inferred the practice was hurtful. In every case, where bleeding in the low form of cholera is mentioned, the quantities ordered to be abstracted would certainly (in 1861) lead one to infer that the heart's action was excited, the pulse full and hard, and bounding. Such I have never found the case either in the incipient or the collapsed stage of the disease. Sixteen, twenty, twenty-four ounces are the amounts Mr Twining usually ordered to be abstracted. In using venesection as a remedy in cholera, *eight* ounces is the largest quantity I ever drew,—in the recent epidemic, *seven* ounces was the largest amount, and only in two cases, usually *three* to *four* ounces was the extent of the bleeding.

Considering "bleeding" in cholera *merely* in reference to its depressing effects on the heart's action *when* excited, it may seem unintelligible that I should recommend it for the purpose of exciting the action of that organ; but this is not more paradoxical than, when first introduced, appeared the practice of giving stimulants in some cases of congestion or apoplexy of the brain, the prevailing time-honoured remedy being to abstract blood. I do not pretend to explain satisfactorily the cause of the success of venesection in cholera, but the facts I have seen are, that combined with plain, quickly-acting stimulants, a greater number of recoveries ensue than from any other practice I have followed.

I will describe a case. A patient is admitted, his eyes are sunken, there is livid discoloration beneath them, his features are so changed that his identity is doubtful, the body is covered with a cold perspiration, the vomiting and purging have ceased, there may or may not be cramps in the extremities, the voice is an anxious whisper constantly giving utterance to an eager longing for water to quench the agonizing thirst, there is no anxiety expressed as to recovery,—the absence of this natural feeling is one of the diagnostic signs of an advanced stage of collapse,—the pulse at the wrist is very weak, and small. Half a drachm of chloroform in a little water, or a suitable dose of any other powerful stimulant, is instantly administered without opium, and repeated as may be necessary every 10, 15, or 30 minutes. A bandage is placed on the arm above the elbow, the veins of the fore-arms *slowly distend;* one of them is opened, some black thickened blood drops out, then oozes out, or altogether stops. The fore-arm is constantly rubbed from the wrist towards the opening in the vein. Each time a few drops are forced out, continue the frictions, the blood again commences to drop, it exhibits a tendency to flow by the droppings becoming more frequent; the colour of the blood too becomes more natural. Persevere with the frictions,—repeat the dose of chloroform: at last the flow becomes a stream which you can hear dropping into the dish, or the blood spurts out from the vein; that instant bind up the arm, and continue the stimulants. If you inquire your patient will say that the feeling of oppression is relieved, frequently he will volunteer this information. If you visit him in half-an-hour, or less, you will find that the animal heat is returning to the extremities. You can now feel them warm at the calf of the leg and below the elbow; if you have patience to continue beside him, you can perceive the progress of the improvement, and in a very few hours the hands are warm and the pulse at the wrist improved in strength. The circulation has been reestablished. I do not assert that every patient so treated recovers, but the facts prove that the probability of recovery in reference to this year's epidemic —one too of a marked low type—was increased 20 per cent.

Having stated my views and practice in the collapsed stage of cholera, I proceed to give the returns of cases treated.

I tried three methods:—

1st, The practice usually followed, viz., stimulants with opium at an early stage, in the form of cholera pills, ether, or ammonia. Stimulants without opium in the collapsed stage, artificial heat, frictions, etc.

2d, In addition to the above, saline injections of common salt and carbonate of soda in very hot water every quarter of an hour.

3d, Diffusible (quickly acting) stimulants, of which I prefer chloroform with bleeding, if on admission the pulse at the wrist was perceptible.

I have purposely omitted any particular description of the second of these, as although it sometimes gives good results even when no pulse is perceptible at the wrist, the practice being tedious and requiring very careful administration, is not well suited to a native hospital, where many of the details of treatment are necessarily left to native assistants.

Nor do I trust in the third stage of cholera, with its fever, local congestions, etc., the treatment being such as is usually followed.

122 *Cases of Cholera Morbus treated in the Agra Central Prison, from 6th to 19th July* 1861, *inclusive.*

	Admitted.	Died.	Cured.	Percentage Deaths.	Percentage Cured.
Usual treatment, . .	58	26	32	44·82	55·18
In addition, saline enemata,	29	12	17	41·37	58·63
Stimulants—Venesection,	35	8	27	22·85	77·15

Note.—There were 123 cases admitted; the one I have left out was treated by venesection: he is recovering, but as he has not been discharged I could not enter him as cured; and in consequence of my going away on leave, I could not longer delay this report.

These figures show that, during this epidemic—one of a low type, in which bleeding has been considered particularly hurtful—the treatment by venesection has given results 20 per cent. in its favour. It ought to be known, in order to appreciate the results, that each of the 122 cases was one of true cholera morbus. I was purposely careful that no cases were admitted about which there could be any doubt. All the prisoners who were sent into hospital from the various wards for vomiting and purging, were kept in the verandahs of the hospital until the disease proved to be true cholera by the progress of the symptoms towards collapse, and every case in the above table had either entered on the stage of collapse, or was on admittance considerably advanced in it. There may have been, and in fact there were, many more cases of cholera than have been entered in the Registers, but they were cured in the early stage of the disease by the prompt administration of the cholera pill or other stimulants, and it is only such cases as did not yield to the early treatment and advanced to the second stage, which have been included in the 122 admissions. So carefully did I exclude spurious cases that in one which I believed was true cholera I opened a vein: the blood immediately flowed in a stream; I instantly bound up the arms, and did not admit the patient. In another instance the patient so evidently exaggerated all the symptoms that I believed he was pretending illness to escape work, a very common practice among the prisoners. I therefore passed on, but was very much vexed when, a few hours later, I found him far advanced in collapse, and his features so changed that I could scarcely believe he was the same person, in fact, I could not recognise him. I am very happy to add that he recovered. Another point worthy of noting is that the 122 cases were treated during the first few weeks of the epidemic, when, as is well known, the disease is most virulent and most difficult to cure. In conclusion, I would earnestly request, that whenever another cholera epidemic breaks out in the Agra Central Prison, I may be permitted to have the use of a separate ward, and the treatment of half the cases, in order to test further the merits of venesection in cholera.

(Signed) G. R. Playfair, M.D., *Civil Surgeon, Agra.*

August 25, 1861.

THE CONDITION OF THE LUNGS DURING COLLAPSE AND AFTER REACTION.

BY DR GEORGE JOHNSON.

The result of Dr Johnson's observations has been to confirm Dr Parkes's statement, that when death has occurred during the stage of collapse, the minute tissue of the lung is remarkably deficient in blood; whereas after death in the stage of reaction, and more especially if there have been consecutive fever, the lungs are exceedingly gorged with blood. The degree of pulmonary collapse, when the lungs are structurally sound, is an accurate measure of the emptiness of the minute capillary vessels. In cases of extreme pulmonary collapse, the air is almost entirely expelled, so that the lungs are non-crepitant on pressure. In most cases the lungs are of pale colour, more especially at the anterior and upper parts; and if the examination of the body be made immediately after death, the pale colour may extend throughout the whole lung. In most cases, there is more or less engorgement of the back parts of the lungs, owing to *post-mortem* gravitation. The defective aeration of the blood in cholera is not due, according to Dr Johnson, to its having suffered a change which unfits it for undergoing the respiratory changes, but simply to the fact that it is arrested before it reaches the air-cells. When the lung is incised, the cut surface, immediately on exposure to air, becomes of a florid red colour, showing that the blood in its vessels is still capable of undergoing the usual respiratory changes. One of the most common sources of danger after reaction has set in, is capillary engorgement of the lungs, and in consequence an accumulation of carbonic acid in the blood. The most hopeful mode of treatment consists in the application of turpentine stupes to the back, and the abstraction of blood by cupping over the lower lobes of the lung.—*British Medical Journal*, 11th August.

Part Fifth.

MEDICAL NEWS.

GRADUATION IN MEDICINE AT THE UNIVERSITY OF EDINBURGH.

ON the 1st of August, the annual ceremony of Graduation in Medicine took place in the Assembly Hall, under the presidency of Sir David Brewster. The following is the list of Graduates with the titles of their theses :—

Those whose names are printed in CAPITALS *passed the Examinations with Honours.*

*** *Those who have obtained Prizes for their Dissertations.*
** *Those deemed worthy of competing for the Dissertation Prizes.*
* *Those commended for their Dissertations.*

Candidate who received the Degree of Doctor of Medicine under the New Statutes.

Groves, Charles Henry, B.A., M.B., and C.M., England.

Candidates who received the Degree of Doctor of Medicine under the Old Statutes.

Allshorn, Adolphus Hahnemann, England. On Tubercular Meningitis.
* BRIGGS, EDWIN ADAM, England. On Mercury, its Cholagogue Action.
* Cowie, Robert, M.A., Shetland. On the Inhabitants of the Shetland Islands.
Crane, Charles Albert, England. Some Remarks on French Hospital Practice.
5 Henderson, William Patrick, Tuscany. On Acute Hydrocephalus.
* Hewan, Archibald, Jamaica. On Malarial Poisoning.
Jones, James, England. A Report of Certain Cases in the Clinical Wards, Session 1865–66.
M'Dowall, Thomas William, Scotland. On Tumours of the Jaws.
** M'Nab, William Ramsay, Scotland. On the Development of Leaves.
10 Miller, Andrew, England. On Uric Acid Gravel.
Moniot, John Adolphe, East Indies. On the Diseases of Joints.
Murray, William Berkeley, Barbadoes. On the Hereditary Transmission of Disease.
Rawlings, Joseph Henry, England. On some Cases of Albuminuria.
Ritchie, Alexander Ramsay, Scotland. On a New Modification of Ecraseur, and its application to Decapitation of Fœtus in Crossbirths.
15* Thomson, John Robert, Scotland. Clinical Observation, illustrating some Forms of Hepatic Disease.
Watson, George, Scotland. On Ovarian Dropsy.
Weston, George Blyth, South Carolina. On Yellow Fever.

Whittle, Alfred, England. On Typhus Fever.
* Williams, William Jones, Wales. On Wasting Palsy, or Progressive Paralysis.
20 Wright, Robert Temple, England On the Fœtal Pulse-rate, as a Means of Predicting the Sex.

Candidates who received the Degrees of Bachelor of Medicine and Master of Surgery.

ALDREN, ROBERT, England. On an Epidemic of Small-Pox.
* Anderson, David Hawley Burn, Scotland. On the Action of Remedies.
* Anderson, Francis Henry, Jamaica. On Pyæmia.
Andrew, James, Scotland. On Apoplexy.
5* Bent, John Francis Vincent, England. On Diphtheria.
Brown, Joseph, Scotland. On Enteric Fever.
*** BRUNTON, THOMAS LAUDER, Scotland. On Digitalis, with some Observations on the Urine.
Cadell, Francis, Scotland. On Cataract, and the Operations for its Removal.
Downie, Kenneth Mackenzie, Scotland. On Excision of Joints.
10 Drummond, Alexander, Scotland. On Tedious Labour.
* Fulcher, George Frederick, England. On the Change of Type in Disease.
Gell, Thomas Silvester, England. On Urethritis, and its Complications.
Gordon, John Mackenzie, Scotland. On Acupressure.
*** Hair, Philip, Scotland. Observations on the Arrangement of the Muscular Fibres of the Alligator.
15* Howells, Thomas, England. On the Excision of the Knee Joint.
Hunter, William Brown, Ireland. On Hygiene.
* Husband, Henry Aubrey, Jamaica. On the Treatment of Nervous Affections following Gunshot Wounds and other Injuries.
* LOWE, GEORGE MAY, England. On the Structure, Relations, and Functions of the Ligamenta Rotunda Uteri. On the Diagnosis and Treatment of the Retained Menses. On the Occurrence of a peculiar Crystalloid Substance in a certain form of Dilatation of the Bronchi.
* MACBETH, JOHN, M.A., Scotland. The Influence of the Nervous System on Nutrition.
20 MacLaren, George Gilbert, Scotland. On Rheumatic Fever.
* Malins, Edward, England. On Fatty Degeneration of the Placenta.
* Moir, John Wilson, Scotland. On Excision of the Knee Joint.
Moon, Charles, Scotland. On the Pathology, Symptoms, Diagnosis, and Treatment of the Gastric Ulcer.
Munro, William, Scotland. Moral Insanity, with especial reference to its Manifestation as Kleptomania and Dipsomania.
25 Paterson, Alexander, M.A., Brazil. On Typhus Fever.
* Pullar, Alfred, Scotland. On Glaucoma, its Nature and Treatment.
* RAMSAY, JAMES, M.A., Scotland. On Syphilization and the Syphilitic Virus.
* Rhind, John, England. On Stricture of the Urethra.
** Sharp, David, England. Additions to the Catalogue of Scottish Coleoptera.
30 Shaw, Robert, Scotland. On Cutaneous, or Exanthematic Typhus Fever.
Smith, John, Scotland. On Aneurism.
Steven, Alexander, Scotland. On Angina Pectoris.
Stewart, William, Scotland. On Fistula in the Genito-Urinary Organs of the Female.
Stolterfoth, Henry, M.A. Cantab., England. On the Influence of the Mental Faculties both as a Cure and Cause of Disease.
35 Sykes, Walter John, England. On the Human Voice.
Symes, William Henry, England. On Accommodation of the Eye.
Treutler, William John, Bengal. On the Evolution of Light from the Living Bodies of Man and the Lower Animals.
* Watson, John Douglas, Scotland. On the Poison-resisting Power of the Hedge-Hog.
39 Yarrow, Thomas, Scotland. The Pathology, Complications, and Connections of Rheumatism.

Candidates who received the Degree of Bachelor of Medicine.

Buchan, Peter, Scotland. Ileus, its Pathology and Treatment.
* Haughey, Alexander Richardson, Ireland. On Asthma.
3* Wigg, Henry Carter, England. On the Physiological Action of Nitro-Benzole.

A Gold Medal has also been awarded to Mr Franklin Gould for his Thesis "On the Thermometer in Disease;" but as he has been unexpectedly called to go abroad, the conferring of his Degree, and the presentation of the Medal, are unavoidably postponed.

REGULATIONS AS TO THE PAY AND POSITION OF NAVAL MEDICAL OFFICERS.

Admiralty, July 12, 1866.

My Lords Commissioners of the Admiralty having had under their consideration the rank, pay, and position of naval medical officers, are pleased, under the authority of Her Majesty's Order in Council of 6th July 1866, to establish the following regulations:—

1. Staff surgeons to be placed on a separate list, and promotion to that rank to be open to officers for distinguished or special service (although twenty years on full pay may not have been completed).

2. The whole time served on full pay as an assistant-surgeon to be allowed to qualify for the rank of staff surgeon, provided the examination for surgeon is passed before he completes ten years' service.

3. The pay of surgeons and staff surgeons to increase by periods of four years instead of five years as at present.

4. In order to put naval medical officers on the same footing as army medical officers, in respect of allowances in hospitals at home and abroad, they are to receive the following money allowances in lieu of provisions for themselves and servants, and for fuel and light:—

	At home.	Abroad.
Inspectors of hospitals, ...	£54 .	£130
Deputy inspectors, staff surgeons, and surgeons, .	£35 .	£112
Assistant-surgeons, ...	£30 .	£108

All other allowances for provisions to cease.

In cases where medical officers draw provisions or fuel from public stores, they will be charged for the same at cost price.

5. The scale of travelling allowances, extra pay, lodging money, and compensation for losses, to be fixed for naval medical officers according to their relative rank with other naval officers.

6. In regard to cabins: to meet the requirements of the service it is necessary that the senior executive officer and the staff commander, or master, should have the cabins placed most advantageously for the performance of their special duties; with these exceptions, medical officers are to have cabins according to their relative rank in the service. Cabins will be allotted to assistant-surgeons.

7. Staff surgeons to be placed on the same footing as commanders with regard to servants.

8. A staff surgeon to be appointed to all flag ships bearing the flag of a commander-in-chief on a foreign station, with an allowance of 5s. a-day in addition to his established pay.

9. The periods of retirement by age to be fixed as follows:—Surgeons and assistant-surgeons at fifty-five years of age; staff surgeons at sixty years of age; inspectors-general and deputy inspectors-general at sixty-five years of age.

10. Assistant-surgeons at home, after completing their time for examination for the rank of surgeon, may be granted two months' leave of absence on full pay, on condition of their resuming their studies at a medical school or hospital.

11. To place staff surgeons on an equality in rank with surgeons-major in the army, they are to rank with commanders according to date of commission.

12. Staff commanders, secretaries to commanders-in-chief under five years'

service, paymasters of fifteen years' seniority, and chief engineers of fifteen years' seniority, who now rank with staff surgeons, to rank with commanders according to date of commission.

13. Officers in command of Her Majesty's ships must, on all occasions, whether on shore or afloat, be considered senior in rank and precedence to officers placed under their command. A ship must always be represented by an executive or combatant officer, after whom all officers are to take precedence according to their relative rank.

14. The pay of naval medical officers to be increased in accordance with the following scale:—

Rank.	Under 5 years' service.	Above 5 years' service.	Above 10 years' service.	Above 14 years' service.	Above 18 years' service.	Above 22 years' service.	Above 26 years' service.	Above 30 years' service.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Assistant-surgeons, .	10 0	12 6	15 0	17 6*	...	...	....	...
Surgeons, ...	...	...	17 6†	20 0	22 0	...	...	...
Staff-surgeons, . .	...	...	...	...	24 0†	27 0	27 0	...
Deputy inspectors-general of hospitals and fleets, . . .	...	...	...	...	30 0†	32 0	35 0	37 0
Inspectors-general of hospitals and fleets,	...	...	...	...	...	45 0†	47 0	50 0

15. Naval medical officers to be permitted to retire after twenty years' service on full pay, but the rate of half-pay awarded to officers so retiring not to exceed five-tenths of the full pay to which they may be entitled from length of service.

16. As a special reward to officers of long and good service, who, owing to the comparatively small numbers of the inspectorial ranks, have not been promoted to any higher position than that of staff surgeon, such officers of the rank of staff surgeon as have served for twenty-five years on full pay, to be allowed the half-pay of £1 a-day, on being compulsorily retired at sixty years of age, or on medical survey.

17. My Lords will consider, and publish hereafter, the manner in which it may be found most advisable to assist naval medical officers in their professional education after examination and admission into the navy.

The new scale of pay to come into operation on the 1st January 1867; the other arrangements from this date.

By command of their Lordships,

T. G. Baring.

We are much mistaken if the circular issued by the late Board of Admiralty just before leaving office, relative to the rank, pay, and position of naval medical officers, will have the effect of inducing highly qualified men to enter Her Majesty's service. Of one thing we are assured, it has not only failed to satisfy the legitimate claims of our brethren already in the navy, but it has caused a general and profound feeling of disappointment and dissatisfaction among them.

However, it may be expected that the present able Board will be enlightened enough to read aright the signs of the times, and to remedy the defects of their predecessors' handiwork. And, if so, their Lordships and the country need be under no apprehension lest the interests of the service should continue to suffer, owing to the want of a sufficient number of properly qualified doctors. We will not believe that the present Board will avail themselves of the brilliant suggestion that Mr Childers (a late Liberal Lord) had the courage to throw out in the House not long since—of training up a special class of medical officers for the public service, gentlemen imbued at once with sufficient ability, due humility, and becoming thankfulness for a low scale of pay.

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* Provided he passes his examination before ten years' service. † Or on promotion.

We shall offer a few comments upon the Regulations contained in the circular for the guidance of those of our young friends whose thoughts may have been turned towards the navy as a calling in life, We make no complaint here of Regulations 1, 2, 3, 5, 6, 7, 8, 9, 10, and 11. But Regulation 4 falls far short of its promise—"to put naval medical officers on the same footing as army medical officers in respect of allowances, &c." "No fellow can understand" how their Lordships (or their clerks) framed this scale. At the most moderate calculation it is *a third too low.*

A comparison of Regulation 6 with Regulation 12 shows the manœuvre of giving with one hand and taking away with the other. Mark the only exceptions mentioned in the former—"the senior executive officer and the staff commander or master"—and then observe what their Lordships do in the latter: they make "paymasters of fifteen years' seniority and chief engineers of fifteen years' seniority" (*i.e.*, standing on the list, irrespective of actual full-pay service) rank with commanders according to date of commission, *the doctors attaining their relative rank only by actual full-pay service of twenty years!* Justice requires *service*, not mere *seniority*, to count for the same step in all grades.

No fault can be found with the first paragraph of Regulation 13. But, according to the second paragraph, any junior executive officer, by "representing a ship," will take precedence (at a regimental dinner for instance) of any medical officer, however superior in rank he may be.

By Regulation 14 an anomaly is established, in so far as the pay of assistant-surgeons is increased by five-yearly, instead of four-yearly intervals. A comparison of this regulation with Regulation 3, which says that "the pay of surgeons and staff-surgeons is to increase by periods of four years," will show that the principle is altogether departed from and most injuriously as regards staff-surgeons, as no increase is granted to them after that at twenty-two years, however long those officers continue to serve in that rank. Neither can it be allowed that the pay of the inspectors and deputy inspectors has been adequately increased.

Regulation 15 grants optional retirement to surgeons, after twenty years' service, on 12s. a-day, *i.e.*, at a pecuniary loss of 4s. 6d. a-day. A staff surgeon retiring at any period after twenty-two years' service, "unless on completion of twenty-five years' service, and at the age of sixty, or by medical survey," would get only 13s. 6d. a-day, instead of, as formerly, 18s. 6d., with the right to go whenever he completed twenty-five years' service.

What is required is, 1*st*, Optional retirement for surgeons on completing twenty years' service, with the half-pay of 16s. 6d per diem, to which they are entitled; 2*d*, Retirement for staff-surgeons after twenty-five years, irrespective of age, with £1 a-day; 3*d*, Compulsory retirement of surgeons and staff-surgeons at sixty years of age.

We have not exhausted the subject; but we have said enough to make our younger brethren pause, and see what the present Admiralty mean to do before they think of joining the naval medical service.

SUGGESTIONS MADE FOR PREPARATION FOR THE ADVENT OF ASIATIC CHOLERA,

By a Committee of the Royal College of Physicians of Edinburgh, at the request of the Chairman of the Board of Supervision for the Relief of the Poor in Scotland, *August* 1866.

I.—What the Authorities should do.

1. Provide District Dispensaries in suitable localities.

2. In these keep such medicines as may be required in emergencies, and especially the medicines recommended in the following suggestions.

3. Keep such adjuvants to treatment as are likely to be required, and are not usually found in the homes of the poor, *e.g.*, straw mattresses, blankets, wood and coal for firing; suitable vessels for heating sand and salt; turpentine and mustard for epithems and cataplasms; disinfectants, as chloride of lime, Condy's fluid; carbolic acid; materials for disengaging chlorine, nitrous acid, and sulphurous acid gases.

4. Provide an efficient staff of medical men, ready to attend whenever symptoms of a suspicious character appear.

N.B.—The public should be taught, and should bear in mind, that the vomiting, purging, and cramps, which accompany the disease, are not the disease; that each epidemic, nay, each case, varies, and that the disease varies in each case at its several stages, and requires different treatment: hence there is no specific cure for cholera; hence also the importance of obtaining medical assistance as soon as possible.

5. Provide an efficient staff of sober, trustworthy, and obedient nurses.

6. Organize a staff of suitable persons to carry out house-to-house visitation, to enforce the necessary sanitary precautions, to report glaring violations of sanitary laws to the proper authorities, to get early notice of cases of the disease, and generally to advise and encourage the inhabitants.

7. Establish hospitals in the larger towns, to which patients suffering under the disease can be removed from insalubrious localities, where they can have fresh air, good nursing, and suitable medical attendance.

N. B.—A full supply of fresh air and pure water, and an efficient system of drainage, are essential for buildings to be used as hospitals. Overcrowding should also be avoided, as much for the sake of the attendants as for the patients. If possible, 3000 cubic feet of air should be allowed each patient. This does not mean that each patient must have that actual amount of space, but that the ventilation of the ward must be so arranged, as to allow him 3000 cubic feet of fresh air per hour.

8. In densely peopled districts, and when practicable, one or more Houses of Refuge should be provided, to which the members of families attacked and neighbours in districts where the disease has been unusually prevalent, or unusually fatal, and where the sanitary conditions are bad, may be removed.

This has proved an efficient means of "stamping out" the disease.

II.—What the People should do to Prevent Attack.

1. Keep the person and clothes scrupulously clean. Woollen garments, that cannot be washed, should be carefully aired.

2. Use wholesome and nutritious food. Avoid all tainted meat, fish, or game, and all uncooked vegetables. Ripe fruits and well-cooked vegetables are important articles of diet, and should be used in moderation.

3. Avoid over-indulgence in spirituous liquors.

N. B.—The history of previous epidemics has taught, that when a habitual drunkard was attacked, he rarely recovered.

4. Take care that the air you breathe in your house, and especially in your sleeping-apartment, is pure, and frequently renewed. To secure this, be careful to,—

5. Remove from the neighbourhood all accumulations of refuse, or decaying

or animal matter. Have all cellars, cess-pools, and privies carefully cleaned. Take care that there is no open drain or gulley-hole sending up noxious vapours. Inside houses take care that waste-pipes communicating with sewers are properly trapped, and that there is no foul air draining from them into cisterns or water-closets.

6. That your water used for domestic purposes is plentiful and good, and especially that it is free from all organic matters.

N. B.—Ten or fifteen drops of Condy's fluid put into a wineglassful of water will diffuse its purple colour through it, if the water be free from organic matter; but if organic matter be present, the red colour will disappear more or less completely, according to the quantity present, and a brownish sediment be in a short time deposited.

III.—How Sanitary Conditions, when Defective, may be Improved.

1. Where the smell proceeds from open drains or gulley-holes, and until their defective condition can be remedied, treat them liberally with chloride of lime, oil of vitriol, carbolic acid, or Condy's fluid. Purify the air by laying fresh animal or vegetable charcoal about, or by diffusing from time to time chlorine, or sulphurous or nitrous acid gases.

N.B.—The three last, unless largely diluted, are dangerous to the windpipe and lungs.

2. Let all night-stools or privies be liberally washed with chloride of lime, and let care be taken that they are not emptied where they can pollute the air for breathing.

3. Let the water used for drinking and cooking be carefully filtered. Organic matter will be destroyed by the addition of five drops of Condy's fluid to each gallon of water. Water to be used should not be allowed to stand long in tanks or pails in rooms or closets, but should be used when fresh.

N.B.—A simple and economical filter can be made by tying a piece of rag or haircloth over the outlet of the tube of a large funnel, and filling the tube with a mixture of fine sand, fine gravel, and powdered charcoal. Water flowing through that will come out as clear as crystal.

IV.—How to Deal with the Premonitory Symptoms.

Cholera is often preceded by derangement of the bowels, especially looseness. When this shows itself, the person attacked is recommended,—

1. To send immediately for a doctor by a messenger who can describe the nature of the attack.

2. If the medical man cannot be got immediately, to clear away all offending matter from the stomach and bowels by a *gentle* dose of castor oil, or rhubarb and soda.

3. To follow up this by the diligent use of the astringent mixture (No. 1), or the astringent pills (No. 2 or No. 3).

4. The patient should at once go to bed in a well-aired apartment, and keep himself moderately warm.

5. A mustard poultice should be applied over the whole belly, and kept there for forty minutes.

6. Cold water, iced water, iced soda water, or ice may be taken freely in mouthfuls at a time.

7. All matters passing from the stomach and bowels should be instantly mixed with chloride of lime, carbolic acid, or other disinfectant, and removed.

8. No unnecessary attendants should be allowed to be present in the sick-room.

V.—How to act if Collapse or Cramps come on.

1. This is known by the surface of the body becoming cold, often blue, in which case medical attendance is required more urgently.

2. Until it can be obtained, the patient may be kept warm by being surrounded by blankets, heated salt or sand, bottles filled with hot water, frequent rubbing—especially of the limbs—either with the hand or with equal parts of chloroform and oil; a mustard poultice may be applied to the belly, or cloths wrung out of boiling water and sprinkled with turpentine. (*These should be removed in forty minutes or sooner, if they cause much pain.*) The limbs should be kept stretched out.

3. The cordial mixture (No. 4) should be given.

4. A useful way of maintaining heat is the following:—Place five or six blankets on an unoccupied bed. Then wring a small sheet out of hot water, spread it over the blankets, and lay the patient naked in the centre, wrap the sheet quickly over the whole person so as to cover all closely but the head. Then fold the blankets in the same way and in succession over the person.

5. Give mouthfuls of iced water, with carbonate of soda dissolved in it, or iced soda water.

6. Give no laudanum or other preparation of opium or astringents in this stage, unless ordered by a medical man.

7. Give no whisky or brandy unless under medical direction, or in the absence of cordial mixture, when a dessertspoonful of either may be given every hour or two.

VI.—When the Stage of Reaction comes on.

If the coldness is succeeded by flushings of the head and face, and heat of skin, stimulants should be gradually lessened, and ultimately given up. Cold cloths should be applied to the head, and the ice or iced soda water persevered in.

VII.—Cautions to be Observed by Attendants on Cholera Patients.

1. No crowding in the room of patients should be allowed.
2. The discharges should be mixed with chloride of lime, and removed.
3. The soiled linen, clothes, etc., should be thrown into a tub of boiling water, to which a little of Condy's fluid may, with advantage, be added.
4. All food intended to be used should be removed from the room in which there is a cholera patient.
5. Wash daily with fresh water.
6. Wash the face and hands, and rinse the mouth frequently with water, to which Condy's fluid has been added.
7. Never eat in, or directly after coming from, the sick-room; or without washing the hands and rinsing the mouth.
8. Avoid as far as possible the exhalations from the body and discharges of the patient.

VIII.—Remedies to be kept in Readiness.

No. 1. *Astringent Mixture.*—℞. Mist. cretæ, ℥v.; Tr. opii, ʒi.; Tr. catechu, ʒvii. *M.* Signa.—A tablespoonful to be given after every loose stool.

No. 2. *Astringent Pills with Opium.*—℞. Tannini, ʒss.; Opii, gr. xii.; Pulv. Capsici, gr. xvi.; Spt. rectific. gtt. v.; Conserv. rosæ, ℈ss.; M. pil. xvi. Signa. —Two to be given immediately, and repeated every third hour while the looseness continues.

No. 3. *Sugar of Lead and Opium Pills.*—℞. Pil. acetat. plumbi et opii, No. xvi. Signa.—One to be given every third hour while the looseness continues.

No. 4. *Cordial Mixture.*—℞. Spt. chloroformi; Spt. ammon. arom.; Tr. capsici, ā ā ℥i. *M.* Signa.—A teaspoonful to be given in water every hour.

N.B.—The above doses are for adults. For children, the doses must be reduced according to age. Opium must be given with great caution to young children.

IX.—SUBSTANCES USED AS DISINFECTANTS.

It is by no means certain that we have any substances capable of destroying the contagion of cholera; certainly chlorine does not. At the same time, it and other substances may be used to destroy organic matter, which in its putrid state seems to act as a hotbed for cholera.

A. *Charcoal* may be freely put about the room.

B. *Permanganate of potash* (Condy's fluid) gives off oxygen, and rapidly destroys organic matter.

C. *Chloride of zinc* destroys sulphuretted hydrogen and organic matter. Burnett's solution contains twenty-five grains to each fluid drachm; of this, one pint should be added to a gallon of water.

D. *Nitrate of lead.*—This is the chief ingredient in Ledoyen's fluid, which is made by dissolving 1 lb. of litharge in 7 ounces of strong nitric acid and 2 gallons of water. It is excellent for deodorizing cesspools.

E. *Chloride of lime* acts entirely by giving off chlorine. It should not be put in metallic vessels or down water-closets, as it corrodes the pipes.

F. *Chlorine* may be prepared by mixing two tablespoonfuls of common salt, two teaspoonfuls of red lead, half a wineglassful of sulphuric acid, and a pint of water.

A bottle, wide-mouthed, in which the following ingredients are mixed, will give off chlorine for a long time, if kept corked when not in use:—Chlorate of potass, 2 drachms; strong muriatic acid, pure water—of each 2 ounces.

G. *Sulphurous acid.*—Easily got by burning a little sulphur. It destroys organic matter, and seems to have a powerful effect on miasms.

H. *Nitrous acid* may be obtained by placing nitre in sulphuric acid, or by putting a bit of copper in a little nitric acid and water. Its action is very powerful on organic matter.

N.B.—Chlorine, nitrous, and sulphurous acid gases should not be introduced into a room with animals, unless largely diluted with atmospheric air.

JOHN SMITH, M.D., *President.*

PHYSICIANS' HALL, EDINBURGH, 14*th August* 1866.

THE CHOLERA IN PARIS.

IN consequence of the persistent refusal of the authorities to permit the publication of the returns of cases of cholera and the resulting mortality, it is impossible to form more than a vague conjecture as to the actual state of the disease in Paris. The *Gazette Médicale* of the 18th of August says,—"The cholera in Paris, during the last eight days, has experienced various oscillations. After a decided diminution, it again assumed a form of increased intensity. At present a new diminution in the number of admissions into the hospitals, and of the number of deaths, leads us to believe that the epidemic is in the period of decline. The mortality in the hospitals, that is to say, in the wards especially set apart for its treatment, has augmented in a feeble proportion. In the departments, the epidemic appears to tend to diminution rather than to increase." The *Gazette Hebdomadaire* is more reassuring, though not, we fear, so correct as the *Gazette Médicale;* it says,—"The invitation" [to refrain from publishing the number of deaths] "we have received from the administration is doubtless not meant to prevent us from announcing a notable diminution of the cholera in Paris. From 120, the mean daily number, the number of deaths has gradually diminished to 60; and we believe we are justified in stating that the epidemic, since its reappearance, has not made many more than 3000 victims." In the meantime, we would urgently recommend any of our brethren, who were preparing to visit the Continent during their holidays, to postpone their visit to a more favourable opportunity. Paris is particularly dangerous; we know of at least two of our townsmen who have died of cholera, contracted in one of the largest hotels in Paris, and one of those most frequented by our countrymen.

THE CHOLERA MIST AGAIN.

Mr Glashier writes to the *Times*:—"During the prevalence of the epidemic of cholera in the year 1854, my attention was directed to the general and particular atmospheric conditions which prevailed during the visitation. Among them I noticed a certain blue mist present night and day, which I connected with the epidemic conditions of the atmosphere, and mentioned in my report upon the meteorology of London in relation to the cholera epidemic, addressed to the then President of the Board of Health, and which was published by him. Last Monday, July 30, on looking from the grounds of the Royal Observatory, Greenwich, under the trees, towards the boundary walls of the Park, I saw the same dense, blue mist, which has continued without intermission to the present time, though somewhat less in density this morning. Ordinary mists pass away when the wind blows with a pressure of ½ lb. on the square foot. Since last Monday we have had pressures of the wind varying from ½ lb. to 9 lb. on the same area, blowing continuously for sixty to seventy hours, yet there has been no change in this blue appearance. I have examined the atmosphere daily for this blueness, particularly during the last twelvemonths, and have never seen anything like it since the year 1854. In my recent quarterly reports to the Registrar-General up to that last published—viz., June 30—I have stated that no meteorological choleraic conditions had been present, and none certainly appeared up to July 22. During the following week I was in the Isle of Wight, and on my return to the Observatory on the 30th July I at once saw the same phenomenon that I had remarked in September 1854. I am therefore unable to say when it first appeared. This blue mist is apparent on all sides; it extends fully to the top of the trees, though it is not then so easy to distinguish. It is most easily discernible through as much atmosphere as possible, viewed from under a tree, looking under other trees. Thus seen, the boundary walls of Greenwich Park and all objects near them are coloured blue; or through gaps in trees, if there are others at a sufficient distance to form a background, when it resembles thin smoke from a wood fire. The intensity of the blue is increased when viewed through a telescope with a low power. It is of great importance to know whether it is general over the country. The only other tint of mist I know connected with the prevalence of epidemic is that of a yellow mist perceptible in like manner when scarlatina is prevalent; in neither case is there any excess of humidity in the air. I may remark that, with the exception of this blueness, and a mist, as seen over London and Essex, there are no other of the peculiar atmospheric conditions which prevailed in 1832, 1848, and 1854, such as an excess of heat, stagnation of the atmosphere, extreme high readings of the barometer, etc.; this holds out the hope that this visitation may not extend or be of long continuance."

EDINBURGH MEDICAL STUDENTS' CHRISTIAN ASSOCIATION.

A meeting of this Association was held in the University on the 26th July; Professor Balfour presiding. The following, among others, were present:—Professor Spence, Drs Handyside, Grainger Stewart, Black, and M'Donald. Letters of apology were read from Sir J. Y. Simpson, Bart., Professor Maclagan, and Professor Henderson. The following resolutions were unanimously adopted:—"1. That in the opinion of this meeting, this Association is worthy of all support, and that the students present resolve to promote its objects by all means in their power. 2. That those members leaving town resolve to make this Association widely known in the districts in which they may be established." A vote of thanks was then given to Professor Balfour for presiding, and to the Medical Missionary Society for their kind co-operation.

COMMISSIONS IN THE BRITISH MEDICAL SERVICE.

The Director-General encloses a List of the Candidates of Her Majesty's British Medical Service who were successful at the Competitive Examination in March last, and who have passed through a course at the Army Medical School, showing the combined results of the Examination.

Names.	*Studied at*	*Marks.*	*Names.*	*Studied at*	*Marks.*
Notter, I. L.	Dublin,	4571	Martelli, W. G.	Dublin,	3405
Comerford, H.	Galway,	4440	Forbes, W. A.	Dublin,	3355
Brown, H. T.	Ireland,	4345	Hodder, F. W.	Toronto,	3304
Wright, I. H.	London,	4060	Stevenson, W. F.	Dublin,	3126
Jennings, W. A.	Galway,	3923	Thompson, W. A.	Dublin,	3045
M'Cutchan, I. N.	Dublin,	3845	Hobbs, H. A.	London,	3022
James, H. N. L.	Edinburgh,	3830	Macpherson, R. M.	Edinburgh,	3000
M'Crystal, E.	Belfast,	3735	Eaton, R. C.	Dublin,	2940
Buchanan, R. F.	Dub. & C.S.	3575	Burnett, W. F.	Ireland,	2930
Rooney, J. P.	Dublin,	3554	Lambert, R. R.	Dublin,	2595
Hanagan, J. H.	Dublin,	3480	Ryan, M. J.	Dublin,	2575
Patterson, J. W.	Dublin,	3420	Boult, E. F.	Bath & Lon.	2525

THE FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

(*To the Editor of the Edinburgh Medical Journal.*)

Glasgow, 16*th August* 1866.

Sir,—In the review of the Minutes of the General Medical Council, in the August number of your Journal, there appears a tabular statement of the relative proportion of successful and rejected candidates at each of the licensing boards. This statement bears to be founded on the table at page 281 of the "Minutes," containing the Annual Returns made by the various licensing bodies, of the number of successful and rejected candidates respectively, for the year 1865. In that table, the return made by the Faculty of Physicians and Surgeons of Glasgow, is as follows:—

Passed at 1st Ex.	Passed at 2d Ex.	Rejected at 1st Ex.	Rejected at 2d Ex.
12	74	2	22

And in the statement of the reviewer the proportion of the successful to the rejected candidates is:—

1st Exam.	2d Exam.
1-8th	1-12th.

A glance at the figures of the return will show that neither of these fractions is correct; the first should have been 1-6th, and the second either 1-3d or 1-4th, the exact ratio lying between these two fractions. The avowedly "rough" mode of computation might explain the error in the first figure; but the second bears no approximation to the truth. The errors were no doubt unintentional, but, in justice to the Faculty, I must request you to insert this letter in your September number.—I am, Sir, your obedient servant,

Alex. Duncan, B.A.,
Secretary of the Faculty.

[We regret the errors which occurred in the review of the Minutes of the General Council, and which seemed to tell against the Glasgow Faculty. They were, as our correspondent supposes, altogether unintentional; they were noticed very shortly after the publication of the last number of the Journal; and we had, before receiving Mr Duncan's letter, intended to correct them.—Ed. *Ed. Med. Jour.*]

OBITUARY.

DR JAMES DUNCAN.

It is our melancholy duty to record the death of Dr James Duncan, a distinguished medical man, who enjoyed perhaps the largest general practice in Edinburgh. This sad event took place at Tours in France, on Thursday the 16th ult., at 6.30 A.M. Dr Duncan was well known both in town and country, and his medical skill, combined with the urbanity of his manners and his genial disposition, secured for him a large circle of friends. He was beloved by his patients, and respected by his fellow-practitioners; and it may be truly said that he had no enemies. He harboured no ill will to any one, but ever displayed that charity which is kind and full of mercy and good fruits. Many were his acts of benevolence to the sick poor, and to those in better circumstances whom the *res angustæ* prevented from duly remunerating medical services. He was domestic in his habits, and his flow of humour made him shine in the social circle.

James Duncan was the only son of the leading partner of the well-known firm of Messrs Duncan, Flockhart, & Co. He was born at Perth on the 2d November 1810. He prosecuted his early studies in Perth, and then at the High School of Edinburgh. The remembrance of these days he rejoiced to keep in the meetings of Mackay's Class Club. He went through a full curriculum of arts at the University of Edinburgh before commencing his medical studies, and he took the degree of M.D. in 1834, his thesis being on Empyema. In the same year he became a member of the Royal College of Surgeons of London. During his studies, anatomy and surgery occupied his chief attention, and he became a skilful dissector and operator.

In 1835 he became a fellow of the Royal College of Surgeons of Edinburgh, and wrote his inaugural paper on tracheotomy. He travelled for about two years on the Continent, and visited the schools of France, Germany, Austria, and Italy. He prosecuted his anatomical and surgical researches with great vigour abroad. He visited also many places of interest, and he enjoyed his rambles among the Alpine scenery of Switzerland. He had a great admiration of fine landscapes, and he used his pencil and his brush on many occasions with much effect. One of the last things he did, about a day before his death, was to take a sketch of a scene at Tours. He became also fond of photography, and was a successful operator in that department.

He acted first as house-physician under Gregory, and then as house-surgeon under Liston, in the Royal Infirmary of Edinburgh; and he subsequently followed that great surgeon to London, and acted as his house-surgeon in University College Hospital. He was a special favourite with Liston, for whom he entertained feelings of affectionate regard. He had the honour of being elected a fellow of the Royal College of Surgeons of England in 1842.

He settled in Edinburgh as a medical man in 1837, and rapidly rose to eminence. He was surgeon of the Royal Infirmary for many years, and had the marked honour conferred on him of being twice re-elected to that office after the usual term of service had expired. He was afterwards consulting-surgeon of the institution, and latterly one of its managers. When senior surgeon of the Infirmary, he delivered lectures on clinical surgery. He was elected a fellow of the Royal Society in 1858. He was the medical officer of the Scottish Provident Institution, and consulting-surgeon of the New Town Dispensary and of the Eye Dispensary.

Though too much engaged in practice to be a frequent contributor to medical literature, Dr Duncan wrote some valuable papers. Among these may be mentioned,—Case of Carotid Aneurism; Case of Fatal Hæmorrhage from Perforation of the Aorta by False Teeth impacted in the Œsophagus; Removal of a Coin from the Larynx by Inversion of the Body; Femoral Aneurism, with Ligature of the External Iliac; Excision of a Fibrous Tumour entirely surrounding the Sciatic Nerve; Paper on Hernia; etc.

Dr Duncan was fond of his profession, and devoted his whole energies to it. He laboured night and day, and his robust frame suffered not a little from excessive toil on many occasions. He found that it was absolutely necessary to take recreation in autumn; and for many years he was in the habit of going to the country for four or five weeks in order to recruit his strength. His fondness for field sports and for fishing, however, often led him, when in the country, to undergo much fatigue, and he did not always reap the full benefit which he should have derived from his holidays.

During 1866 the increase of his practice was such as to exhaust his strength, and accordingly, with the view of relaxation, he went with his wife and family, at the end of July, to the Continent, leaving his son to take charge of his practice in his absence. He visited Paris in the first instance, and spent several days there. Cholera was prevalent in that city, and he seems to have imbibed there the germs of that disease. On Sunday, 12th August, he had an attack of diarrhœa, which, however, yielded to remedies, and did not prevent him from going next day to Orleans. Thence he proceeded to Tours, and there it was, on the morning of the 15th, that marked choleraic symptoms were developed, which proved fatal on the morning of the 16th. There were, however, no urgent cramps or other painful concomitants of the disease, and he appears to have sunk from exhaustion. He was attended by a medical man at Tours, and by his friend, Mr Chapenell, from Paris; and all that a wife and daughters could do in the emergency was assiduously supplied. He was sensible to the last, was aware that he was dying, spoke to the members of his family in a collected and calm manner, and his latter end was peace.

His loss will be long felt among us. Many a family circle will mourn over his departure. His kind manner and his genial flow of spirits cheered many a patient, who loved him as a friend, and trusted him as a doctor.

PUBLICATIONS RECEIVED.

Bell,—Manual of Operations of Surgery. By Joseph Bell, F.R.C.S.E., etc. Edin., 1866.

Drysdale,—Cholera, its Nature and Treatment. Edited by Dr C. Drysdale. London, 1866.

Gordon,—Army Hygiene. By Chas. Alexander Gordon, M.D., C.B., etc. London, 1866.

Johnson,—Epidemic Diarrhœa and Cholera: their Nature and Treatment. By George Johnson, M.D., etc. London, 1866.

Markham,—Bleeding and Change of Type in Diseases. The Gulstonian Lectures. By W. O. Markham, M.D. London, 1866.

Medical Acts (The) and the Proposed Medical Acts Amendment Bill. London, 1866.

Meredyth,—Rational Employment of Mercury in Syphilis. By Dr C. Meredyth. London, 1866.

Parkin,—Antidotal Treatment of the Epidemic Cholera. By John Parkin, M.D., etc. Third Edition. London, 1866.

Plum,—Om Brokincarceration. Af P. Plum. Copenhagen, 1866.

Simms,—A Winter in Paris. By Frederick Simms, M.B. London, 1866.

Yod,—Simple Explanation of Cholera, and a Rational Mode of Curing it. By Yod, M.D. London, 1866.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Historical Sketch of the Edinburgh Anatomical School.* By JOHN STRUTHERS, M.D., F.R.C.S. Edin.; Professor of Anatomy in the University of Aberdeen; late Lecturer on Anatomy, Edinburgh.

THE following historical sketch was delivered as a lecture before the Royal College of Surgeons of Edinburgh in April last, and now appears with notes and some additions to the text. It is to be regretted that the lives of the anatomists of the school have in some instances not been written at all, and in others unsatisfactorily. It has, therefore, not been easy to fill up some of the gaps, so as to frame a connected history of the school; and the facts, which, as will appear, are scattered, have required considerable sifting. The materials which I have collected have, however, at length become voluminous, and my remaining difficulty has been to give, in so short a space, anything like a satisfactory rendering of so long a period, and of so many eminent men.

THE SURGEONS IN 1505.

Provision was made for dissection in Edinburgh so early as 1505. The evidence of this is contained in the first charter to the Surgeons, granted by the Town Council, on 1st July 1505, and ratified by James IV. in the following year. The applicant for admission to the Incorporation was to be examined in anatomy, and the Surgeons were to have a body for dissection once a-year.[1]

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[1] "And als That everie man that is to be maid frieman and maister amangis ws be examit and previt in thir poyntis following THATT IS TO SAY That he knaw anatomea nature and complexioun of every member In manis bodie And in lykewayes he knaw all the vaynis of the samyn thatt he may mak flewbothomea in dew tyme And als thatt he knaw in quhilk member the signe hes domination for the tyme for every man aucht to knaw the nature and substance of every thing thatt he wirkis or ellis he is negligent And that we may have anis in the yeir ane condampnit man efter he be deid to mak antomea of quhairthrow we may haif experience Ilk ane to instruct others And we sall do suffrage for the soule."

The condition that the condemned man was to be dissected only "efter he be deid" is not so unmeaning as may at first appear. Herophilus and Erasistratus, Considering the state of science, and of opinion regarding the propriety of the dissection of the human body, at this time, it is a remarkable circumstance that the importance and the practice of dissection, as the groundwork of the healing art, had been thus early and wisely recognised by the municipal authorities of Edinburgh.[1]

For nearly two centuries after the date of this charter we have no information as to anatomical study. We can only infer that the surgeons availed themselves of the privileges secured to them by the terms of the charter. Medical education was by apprenticeship, with these occasional dissections by the Surgeons for the instruction of themselves and their apprentices.

DEVELOPMENT OF THE SCHOOL, 1694 TO 1720.

The year 1694 commences a new period, extending over a quarter of a century, during which, various efforts were made to establish a school of anatomy in Edinburgh.[2] The impetus at this time,

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under the first Ptolemy, probably the first who were authorized to dissect human bodies, were said to have been in the habit of opening also the bodies of the living in search of the more secret springs of life. This was still received by the vulgar, as well as the tradition of living bodies having been opened under the belief that they were dead. Half a century after the date of this charter, Vesalius was believed to have opened the body of a young nobleman whom he had supposed to be dead, discovering his mistake when it was too late.

[1] This was more than a century before Harvey discovered the circulation of the blood. Vesalius, the father of modern anatomy, was not then born. "The Emperor Charles V. was little more than five years old; that same emperor, who, many years after, called a consultation of divines at Salamanca to determine if it were consistent with conscience to dissect a human body for the purposes of science" (Gairdner, p. 4; Hutchinson's Biographia Medica, vol. ii. p. 472). Sylvius, the Parisian professor of anatomy was, in 1551, and at the age of seventy, still worshipping and defending Galen, and himself teaching anatomy "from small fragments of dogs" (Morley's Life of Jerome Cardan, vol. ii. p. 100). The following refers to a period a century after the date of the Edinburgh charter:—"We may form a judgment about the state of anatomy, even in Italy, in the beginning of the seventeenth century, from the information of Cortesius. He had been professor of anatomy at Bologna, and was then professor of medicine at Messana; where, though he had a great desire to improve himself in the art, and to finish a treatise which he had begun on practical anatomy, in twenty-four years he could, *twice only*, procure an opportunity of dissecting a human body, and then it was with difficulties and in a hurry; whereas, he had expected to have done so, he says, *once every year*, *according to the custom in the famous academies of Italy*." (William Hunter's Introductory Lectures, 1784, p. 41).

[2] The history of this period is based on the Records of the Town Council, extensively published by Bower in his elaborate history of the University ("The History of the University of Edinburgh." By Alexander Bower, 1817); and on the Records of this College, and also of the Town Council, extracted and published by Dr Gairdner ("Historical Sketch of the Royal College of Surgeons of Edinburgh," 1860; and "Sketch of the Early History of the Medical Profession in Edinburgh," 1864; by John Gairdner, M.D.), who has supplied the deficiencies and corrected the inaccuracies of Bower's account of the origin of

while favoured by the more peaceful condition of the country, was no doubt given mainly by the extension of the powers of this College (by royal grant in 1694, ratified by Parliament in 1695) from the city to the three Lothians and the counties of Peebles, Selkirk, Roxburgh, Berwick, and Fife. The tendency of this change would be greatly to increase the number of young men seeking to enter the profession through the college.[1] To ALEXANDER MONTEITH, an active member of the Incorporation, belongs the merit of making the first effort to open a school of anatomy. With this view he applied to the Town Council for a grant of dead bodies. This he appears to have done at the instance of Dr Archibald Pitcairn. This active and master spirit, who had held since 1685, the nominal office of Professor of Practice of Physic in the University,—had shortly before (in 1693) returned from Leyden, where he had gone to be Professor of Practice of Physic in 1692. He had brought with him the desire to see a school established in Edinburgh. He wrote, in October 1694, to a friend in London, that he was moving to obtain bodies from the Town Council, and expected, if this was granted, to surpass Leyden.[2] Although Pitcairn's political connexion may have been sufficient reason for his keeping in the background and putting forward Monteith to make the application to the Town Council, it does not appear that Pitcairn had the intention of himself engaging in teaching anatomy, or that he wished otherwise than that Monteith should be the person to carry out his plan.

Monteith's petition is dated 24th October 1694, and was at once granted. The Council appears not to have then understood the wisdom of allowing a motion to lie over till next meeting. Just a week afterwards (2d November 1694) the other Surgeons gave in,

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the school, especially in relation to the part taken by the Surgeons in its formation. Dr Gairdner has kindly placed his MS. extracts from the original documents at my disposal. My frequent references are to his 1860 address, unless otherwise mentioned. Dr Gairdner, as will appear, has also, with the greatest kindness, done much to lessen the disadvantage at which distance has recently placed me in regard to consulting the Records of this College, and of the Town Council, for other parts of my lecture.

[1] The few physicians in Edinburgh at this time (the first charter of whose College is dated 1681) obtained their degrees in medicine, so far as known, from foreign universities (Gairdner, 1864, p. 16), and young men in search of medical education were in the habit of resorting, sometimes at no small risk as well as expense, especially to the then celebrated University of Leyden.

[2] "We are told 'That on the 14th of October 1694, Dr Pitcairn informed Dr Robert Grey of London of his being very busy in seeking a liberty from the Town Council of Edinburgh to open the bodies of those poor persons who die in *Paul's Work*, and have none to bury them.' 'We offer,' says Pitcairn, 'to wait on these poor for nothing, and bury them after dissection at our own charges, which now the town does; yet there is great opposition by the chief surgeons, who neither eat hay, nor suffer the oxen to eat it. I do propose, if this be granted, to make better improvements in anatomy than have been made in Leyden these thirty years.'" (Chalmers' Life of Ruddiman, p. 30, quoted by Bower, vol. ii. p. 148).

on the part of their Incorporation, a similar petition to the Council. The members of the Incorporation having hitherto enjoyed equal privileges in regard to the supply of bodies for dissection, were alarmed at the special grant to one of their number. Monteith appears to some extent to have stolen a march on his brethren, though the date of Pitcairn's letter, above quoted (14th October), shows that the intention was known to them. At all events, Monteith was not acting in concert with his brethren. The petition by the other Surgeons was not against Monteith's grant,[1] nor that they might share it with him, but that they might have other subjects than those already granted to Monteith, and their application was for the whole members of the Incorporation, of which Monteith was one. Monteith obtained a grant, exactly as he had asked, of "those bodies that dye in the correction-house," and of "the bodies of fundlings that dye upon the breast." The Surgeons obtained "the bodies of fundlings who dye betwixt the tyme that they are weaned and thir being put to schools or trades; also the dead bodies of such as are stiflet in the birth, which are exposed, and have none to owne them; as also the dead bodies of such as are *felo de se*, and have none to owne them; likewayes the bodies of such as are put to death by sentence of the magistrat, and have none to owne them,—which incluides what former pretensions of that kind the petitioners have."[2]

Monteith also obtained a room for dissections.[3] Other conditions attached to the grant are curious. The dissection was to be during the winter season only, from one equinox to the other; "all the gross intestines" were to be buried within forty-eight hours, and the rest of the body within ten days, at the petitioners' expense. The regular apprentices of the Surgeons were to be admitted at half fee, and the right of being present was reserved to any of the magistrates who thought fit. Any friend who desired might require the body to be buried, if he refunded "to the kirk treasurer what expenses he hath been at upon the said deceased persons." The conditions attached to the grant to the Surgeons are to the same effect, without mention of the gross intestines, and with what proved ultimately the important addition, "that the petitioners shall, befor the terme of Michallmes 1697 years, build, repaire, and have in readiness, ane anatomicall theatre, where they shall once a year (a subject offering) have ane public anatomicall dissection, as much as can be showen upon one body, and if the failzie thir presents to be void and null."

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[1] "The ground of their appearance against Mr Monteith's gift was only upon the supposition that he had enhanced and monopolized the whole subjects of anatomical dissections. But finding that, besides these subjects that the Council had been pleased to give, there were yet other subjects that might fall in the Council's power to give the petitioners," &c. Both Petitions, and Minutes of Council, are quoted at length by Bower, vol. ii. p. 150.

[2] Records of Town Council, as given by Dr Gairdner p. 16. Bower (ii. 157) says that the bodies of all unclaimed criminals already belonged to the Incorporation of Surgeons as a perquisite. There is no proof of this, unless we accept the words "which includes what former pretensions of that kind the petitioners have" as referring, which it not improbably does, only to the last-mentioned class of bodies. The charter of 1505 secures only one such subject annually. The words of the Surgeons' petition do not make this clear. They asked "the dead bodies of foundlings after they are off the breast, and the bodies of such as may be found dead upon the streets, and such as die a violent death, all which shall have nobody to own them." (Bower, ii. 154.) The supposition, however, would account for Monteith not having asked for these bodies. It will be observed in the grant, that it applied only to those criminals who "have none to owne them."

[3] "Any vacant waste-room in the correction-house, or any other thereabouts belonging to the town."

Monteith's scheme did not succeed. His grant had been for thirteen years, but after three years (16th April 1697) he took a lease of a chemical laboratory within Surgeons' Hall for the purpose of teaching chemistry.[1]

Although it has been taken for granted that Monteith taught anatomy during the intervening three years, there is no evidence that he did. The only, or almost only, pupils who could be obtained at that time in Edinburgh, were the apprentices of the Surgeons, and as Monteith had, unlike Monro afterwards, acted without concert with his brethren, who were now conducting a rival scheme, he could scarcely have a class. Monteith, however, must have been on good terms with his brethren of the Incorporation, as they elected him their president in 1695 and 1696.[2]

If Monteith did not actually teach anatomy himself, he had at least the merit of being the first who endeavoured to do so in Edinburgh, and of originating, with Pitcairn, a movement which led ultimately to the formation of a school.[3] We need the less regret that the rival scheme of the other Surgeons succeeded rather than Monteith's, as it led on at last to the appointment of Monro.

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[1] Gairdner 1864, p. 23. The Surgeons had resolved on 2d June 1696 to build a hall, assigning as a reason that the Town Council's gift would otherwise lapse (Surgeons' Records, Gairdner, p. 17). Monteith would see that this theatre would give permanence to the Surgeons' scheme. His change to chemistry enabled him to teach in the hall, and to avoid rivalry with his brethren. Dr Pitcairn wrote of him, in 1694, as "an excellent man, an eminent surgeon, and well acquainted with chemistry." He was still teaching chemistry in 1702 (Bower, ii. 149 and 159). On 1st June 1698, he petitioned the Town Council for some remuneration (Bower, ii. 158), and was allowed four hundred pounds Scots. This grant could not be part of an arrangement for the abandonment of his anatomical scheme, as the lease for the chemical laboratory was taken a year before. It does not appear what claim Monteith had on the Council, except the importance of helping on the new scheme of this enterprising surgeon.

[2] He was again elected chairman of the Surgeons in 1699. From this office, as well as those of Town Councillor and Convener of the Trades, he was "displaced for a year and a day by the Lords of the Secret Council, at the instance of the Magistrates" (Chronological List of Presidents R.C.S., p. 12), probably under suspicion as a partisan of the Stuarts. Monteith was highly connected, being the son of the representative of the second or Stuart line of Earls of Menteith (Gairdner, p. 20, and 1864, p. 23). He was the leading Edinburgh surgeon of his day. His name appears as entering the Incorporation 22d December 1691. He died in 1713.

[3] The terms of his petition to the Town Council show what he contemplated —"That whereas the improvement of anatomy is of so universal concern, that

Completion of the Surgeons' Anatomical Theatre and Commencement of the Annual Public Anatomical Dissection.—On 17th December 1697, the Surgeons' Anatomical Theatre being reported to the Town Council as completed, the Council ratified its grant (of 1694), and the same day the Surgeons chose a "committee to appoint the methods of the public dissections and the operators."[1] Although since 1505 the Surgeons had been entitled to a body annually, we have only now the commencement of what was termed a "public anatomical dissection." This did not mean open to any one, for the Town Council, much against the wish of the Surgeons, restricted the use of the theatre to the regular apprentices and pupils of freemen;[2] but was evidently a provision to secure a formal course of anatomical instruction. It is remarkable that this injunction should have emanated from the Town Council, apparently unsought; but the Chairman of the Surgeons sat at the Council Board.

Those of their number to whom the Surgeons intrusted this duty were termed "operators." An interesting minute in the Surgeons' Records, of date 18th May 1704,[3] shows the method in which this course of anatomy was conducted. It records a vote of thanks to the operators who had conducted the course in the previous month. The names and subjects are thus enumerated:—The *first* day, James Hamilton—a discourse on anatomie in generall, with a dissection and demonstration of the common teguments and muscles of the abdomen. The *second* day, John Mirrie—the umbilicus, omentum, peritoneum, stomach, pancreas, intestines, vasa lactea, mesentery, receptaculum chyli, and ductus thoracicus. The *third* day, Mr Alexander Nisbet—the liver, vesica fellis, with their vessels, spleen, kidneys, glandulæ renales, ureters, and bladder. The *fourth* day, George Dundas—the organs of generation in a woman, with a discourse of hernia. The *fifth* day, Robert Swintoun—the containing and contained parts of the thorax, with the circulation of the blood and respiration. The *sixth* day, Henry

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the practice thereof is encouraged in all nations and cities where the health of the bodies of men are regarded . . . . he would not only lay himself out for the improving of anatomy, but also would serve as chirurgeon to the town's poor *gratis* . . . . Craving, therefore, the Council to consider the premises, and what advantage the same may be of, not only to the interest of the city, but to the whole kingdom." And the first words of the Council's grant show the sense in which they understood the proposal—"Which being considered by the Council, they think it both convenient and necessary to give a beginning to the practice of anatomy in this city."

[1] Records of the Surgeons,—Gairdner, p. 17; Council Register, Bower, ii. 157.

[2] This is mentioned by Gairdner, p. 17, but does not occur in Bower's copy of the Council Register, ii. p. 157.

[3] Gairdner, 1864, p. 24.

Hamilton—the hair, teguments, dura and pia mater, cerebrum, cerebellum, medulla oblongata, and nerves within the head. The *seventh* day, Robert Eliot—the five externall senses, with a demonstration of their severall organs. The *eighth* day, John Jossy—the muscles of the neck and arm, with a discourse on muscular motion. The *ninth* day, Walter Potter—the muscles of the back, thigh, and legg. The epilogue or conclusion by Dr Archibald Pitcairn." Pitcairn, though physician, had, in 1701, entered also the Incorporation of Surgeons, and we may be sure that the epilogue would not be the least interesting part of this course of anatomy in ten lectures. It will be remembered that the terms of the grant required the body to be buried in ten days, and the labour of dissection, as well as of exposition, was lessened by dividing the duty among ten lecturers, who appear to have been appointed to the duty for the current year only.

Appointment of Special Teachers of Anatomy—Elliot, Drummond, M'Gill, Monro.—A new system was begun in 1705, by the Surgeons intrusting the entire duty to one of their members, and at the same time a new element is introduced by the Town Council conferring upon the same surgeon the appointment of professor of anatomy in the University, so that the appointment came to be a double one, the Town Council giving a small salary (£15), and the Surgeons supplying the theatre. During a period of fifteen years these appointments were held by Robert Elliot, Adam Drummond, and John M'Gill, till 1720, when Drummond and M'Gill resigned in favour of Monro, whose appointment begins a new era in the school.

The reasons for the first appointment deserve notice. Elliot offered to his brethren of the Incorporation to undertake the duty, and his offer was accepted.[1] His object in petitioning the Town

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[1] Elliot's application and its acceptance by the Surgeons (Surgeons' Records, 1st February 1705), and the Town Council Minute (29th August 1705) are given in full by Gairdner, pp. 32, 33; the latter also by Bower, ii. 159, and by Dalzel, ii. 291. In his petition to the Town Council we read, that, having been "by ane act of the Incorporation of the Chirurgeon-apothecaries of this city unanimously elected their public dissector of anatomie, the petitioner was of intention to make ane public profession and teaching thereof for instructing of youth to serve her Majesty's lieges both at home and abroad in her armies and fleets which he hoped, by the blessing of God, would be ane mean in saving much money to the natione expended in teaching anatomie in forraigne places, beside the preventing of many dangers and inconveniences to which youth are exposed in their travells to other countries." Bower, aware of no other reasons than those assigned in this petition, writes about Marlborough being then at the height of his reputation, and the increasing demand for medical men for the army. The reasons assigned were good, but Elliot was more candid with his brethren of the Incorporation, as the following extract from the Surgeons' Records (Gairdner, p. 32) will show:—1st Feb. 1705.—"The Deacon etc being conveened and taking into their consideration certain proposals given in unto them be Robert Elliot one of their own number bearing that sundry of the Society were informed of a person now in this city that designed to apply to this society for their allow-

Council was to obtain pecuniary assistance, which the Council granted.[1]

Elliot is commonly mentioned as the first professor of anatomy in the University. The facts are:—No title of any kind is used in the Surgeons' minute, Elliot's appointment by them being simply their acceptance of his offer to undertake the duty. The Town Council minute, as above quoted, refers to the Surgeons having unanimously elected Elliot their "public dissector of anatomie," but the minute of Town Council confers no title, or other University appointment than that (in the terms above quoted) which we would now-a-days call conservator to the museum of the University. It was salary not title that was in question. But in subsequent minutes the title of "Professor of Anatomy" is used by the Town Council in referring to Elliot, and in appointing his successors, although the Surgeons do not employ the designation in their Records.[2]

ance and encouragement in the publick and privat teaching of anatomie, and for that end was to offer to them the giving of their apprentices and servants the benefit of public dissections and demonstrations yearly gratis, he having access to the bodies they have a right to, the use of their theatre and benefit of teaching their apprentices and servants in his private colledge—So after considering the designe of the forsaid gentleman the said Robert Elliot did humbly judge it would no less tend to the credit of this honourable boord to allow and appoint such of their own number as make the same offer especially seeing they have already begun it in their own persons, and for that end did offer his service this way, hoping the table would favourable construe of this his forward offer, and at the same time rather imputt it to a desire of preventing extraneous hands in meddling in their matters than any prospect that he can have in view this way—And if the calling shall be pleased to allow to the said Robert Elliot upon the foresaids conditions the benefitt of these bodies spolk of and their theatre for what is publick and the encouragement he may reasonable expect from their apprentices and servants in what he does in a private colledge he shall not fail (through Divine assistance) to give all possible care etc." It is to be regretted that we do not know even the name of this now mysterious stranger, to whom we owe Elliot's proposal, and the change of system which the adoption of it inaugurated.

[1] "In reguard the petitioner was by the Incorporation of chirurgeons unanimously chosen to that effect, therefore the committee were of opinion that the petitioner should have ane yearly allowance of what soume the Councill should think fitt towards the encouragement and defraying his charges thereanent with the express provisione and conditione that the petitioner take exact notice and inspectione of the rarities in the colledge, and that an exact inventar be made of the same and given in to the Councill."

[2] 28 July 1708.—"The Councill with the extraordinary Deacons upon a representation made to them by John Mirrie present Deacon of the Chirurgeons made constituted and ordained Mr Adam Drummond Chirurgeon-apothecary to be conjunct Professor of Anatomy with Robert Elliot Chirurgeon-apothecary and present Professor thereof, and allowed him the equal half of the emoluments and casualties due to the said Robert Elliot conform to the Councill's Act in his favours of the date 29th day of August 1705 years whereanent thir presents shall be warrand." 24th October 1716.—"The same day the Counsel with the extraordinary Deacons upon severall greate and weighty considerations have constituted and ordained and hereby constitutes and ordains Mr John M'Gill, present Deacon of the Chirurgeons to be Professor of Anatomy

Elliot was elected by the Surgeons 1st February 1705, and by the Town Council on his petition to them, on 29th August 1705. He had entered the Incorporation in 1696, and died in 1715. He was professor of anatomy for ten years;—three as sole professor, during the remaining seven joint-professor with Drummond.

Drummond was elected joint-professor of anatomy with Elliot, by the Town Council, on 28th July 1708, on a representation made in his favour by the president of the Surgeons; and on 5th August, following "was admitted by the Surgeons, on a motion by Elliot, to be conjoined with him in the use of the theatre, both for public and private courses." He had entered the Incorporation in 1707; was joint-professor of anatomy for twelve years, till 1720, when he demitted in favour of Monro; was president of the Surgeons in 1748 and 1749; and died in 1759.

M'Gill was elected joint-professor of anatomy along with Drummond, in room of Elliot deceased, on 24th October 1716; and on the 28th March following was appointed by the Surgeons also. He had entered the Incorporation in 1710, was president in 1716 and 1717, and again in 1732 and 1733.[1]

"On the 21st January 1720, Drummond and M'Gill stated to a meeting of the Surgeons their inability to attend to their professorship. 'They and the haill calling being perswaded of the sufficiency of Alexander Monro, one of their number, did therefore unanimously recommend him to the Provost and town of Edinburgh to be Professor of Anatomy within the said city.' On the 29th January 1720, the demissions of M'Gill and of Drummond, subscribed with their own hands on the 26th and 28th were reported to the Town Council by Mr John Lauder, then Deacon, who recommended Alexander Monro, and tabled the recommendation of him by the Surgeons."[2] The Council accepted the demissions, and

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in place of Robert Elliot deceased in conjunction with Mr Adam Drummond, Chirurgeon-apothecary, present Professor thereof."—(Town Council Records, MS. from Dr Gairdner.) Again in the Council Records, 22d January 1720, containing Monro's appointment, Drummond and M'Gill are spoken of as "conjunct Professors of Anatomy in this city and colledge;" and Monro is appointed "Professor of Anatomy in this city and colledge." Bower, ii. 167.

[1] In the Edinburgh Medical Essays (vol. ii. p. 224) is a graphic account by M'Gill of a case of large false aneurism at the bend of the arm in which, after pressure had failed, he performed the operation in the Infirmary, in 1733, with evident dexterity and familiarity with the anatomy of the parts.

[2] Gairdner, pp. 17, 18, from whose references to the Surgeons' and Town Council Records the above facts and dates regarding Elliot, Drummond, M'Gill, and Monro, are given. Bower's account is either inaccurate or deficient. The following occurs in the "Address delivered at the Opening of the New Hall of the Royal College of Physicians," 1846, by W. Beilby, M.D.:—"In 1720, Alexander Monro, *primus*, proposing to teach anatomy, applied to the College of Physicians for what was at that time an indispensable prerequisite, the formal sanction of its 'Testimonium;' which being granted he received a commission from the Town Council to teach" (p. 23). The Council minute appointing Monro (Bower, ii. 166) contains no mention of the College of

elected Monro "Professor of Anatomy in this city and college," continuing the yearly salary of £15.

In making and agreeing to these appointments of Elliot, Drummond, M'Gill, and Monro, no question of precedence or of relative authority appears to have arisen between the Incorporation of Surgeons and the Town Council. In the case of Elliot the Surgeons appointed first, the Council following; in the other three cases, the Council made the appointment—in Drummond's case, on a representation by the chairman of the Surgeons, in Monro's case, on the more formal recommendation of the Surgeons—the Surgeons then granting the use of their theatre. The Council, being the municipal authority, as well as patrons of the University, gave the title of Professor of Anatomy in the city as well as in the University. The Surgeons had the theatre, the subjects, the command of the pupils, and required some one to teach anatomy to their apprentices; the Council had the power of withholding the subjects, and of granting the salary. There was a common interest, no question arose, and there was probably some looseness, or at least no fixed principle, of procedure. The harmonious action of the two Incorporations was no doubt greatly promoted by the circumstance that the President of the Surgeons (or Deacon, as he was then called) had a seat at the Council Board, a connexion which terminated with the Burgh Reform in 1833. Although it was attended with the drawback of the veto by the Council on the Surgeons' choice of their president, a power which the Council more than once exercised, there can be no doubt that this connexion was, in these early times, of signal benefit in promoting the anatomical school.

It does not appear that there was much anatomical teaching by Elliot, Drummond, or M'Gill. In a manuscript autobiography of Monro, which Bower had the opportunity of examining,[1] Monro mentions, among his early opportunities in Edinburgh, having attended "the dissection of a human body which was shewed once in two or three years by Mr Robert Elliot, and afterwards by Messrs Adam Drummond and John Macgill." Monro's personal knowledge of this, as a student, would be for a few years preceding 1717, and we are not informed at what age he wrote the above. On the other hand, there is a minute in the Surgeons' Records of a meeting held by them on 20th May 1711, to condemn and put a stop to the violation of the graves in the Greyfriars' churchyard, which states that the supply of subjects had been hitherto "plentiful," although the fact of the occasion of the minute does not well bear out the

Physicians. The mistake in Dr Beilby's address is partly explained by a minute of Town Council (August 24, 1720; Bower, ii. 177) seven months after Monro's appointment. Both colleges had been stirred up by Monro's friends, to attract notice and give success to his first course of lectures, and had written to the Town Council setting forth the importance of encouraging Monro.

[1] ii. 168 and 170.

statement.[1] The terms of Elliot's application, and of Drummond's admission to the use of the theatre, show that there was the distinction of "private" and "public" anatomical teaching, with, as indicated in Elliot's case, separate remuneration for the "private colledge." In Elliot's time, too (1707), there is an indication of activity in a dispute which the Surgeons had with the Magistrates of Dundee about the carcase of "ane elephant."[2]

COMMENCEMENT OF THE MEDICAL SCHOOL.

The chief object in seeking the appointment from the Town Council in the cases of Elliot, Drummond, and M'Gill, appears to have been to obtain the salary which the Council gave with the title of Professor of Anatomy in the University; but, in Monro's case, the University appointment was the chief object, as part of the plan now on foot for the formation of a regular school. The best way to accomplish this was by obtaining the theatre and subjects belonging to the Surgeons, their apprentices for pupils, and their support with the Town Council.

After the appointment of Monro in 1720, the scheme rapidly developed. Four members of the College of Physicians, Drs Sinclair, Rutherford, Plummer, and Innes, who had been preparing for the duty, by study at Leyden under Boerhaave, now joined Monro at the Surgeons' theatre, and taught the theory and practice of medicine and chemistry. Left behind by the removal of Monro, five years afterwards, to the University buildings, they petitioned the Town Council to be made professors in the University. This the Council did on 9th February 1726. Thus the Medical School of the University was formed by the transference of the school which Monro had gathered round him in the theatre in old Surgeons' Hall.[3]

[1] The minute is quoted in full, from the Town Council Records, by Bower (ii. 163), and is, so far as I am aware, the first record of this practice in Edinburgh. The minute states that "of late there has been a violation of the sepulchres in the Greyfriars' churchyard, by some, who most unchristianly have been stealing, or at least attempting to carry away, the bodies of the dead out of their graves. . . . . But that which affects them most is, a scandalous report, most maliciously spread about the town, that some of their number are accessary, which they cannot allow themselves to think, considering that the Magistrates of Edinburgh have been always ready and willing to allow them what dead bodies fell under their gift, and thereby plentifully supplied their theatre for many years past." They entreat the magistrates to search out and punish the authors, actors, and abettors; enact that any of their number who shall be found accessary to the violation of the graves, shall be expelled, and that any apprentice, or servant, found guilty shall forfeit his indenture and be expelled his master's service with disgrace.

[2] Surgeons' Records.—Gairdner, p. 22.

[3] Of St Clair, Rutherford, Plummer, and Innes, Bower (ii. 210) says, "They appear to have taught at their own lodgings, or in some public hall;" Gairdner (p. 21), that they taught in the theatre at Surgeons' Hall. In an "Essay for Reforming the Modern Way of Practising Medicine in Edinburgh," by Dr Græme, printed in 1727, the following reference is made, Thomson states, to

Looking back on this history we are struck, first, with the early enactment of dissection, and then, notwithstanding, by the long period during which no progress was made, although during these two centuries anatomical teaching and science had made great progress on the Continent—in Italy, Belgium, Holland, and France. During this time Vesalius, Fallopius, Vidius, Sylvius, Columbus, Eustachius, Varolius, Fabricius, Malpighi, Ruysch, and other anatomists of fame, had flourished; Harvey had discovered the circulation of the blood, in the neighbouring kingdom, a century before, and had been dead for sixty years; and yet Edinburgh, which was erelong to surpass all other schools in reputation, was during all this time without either school or anatomist of fame. For the explanation of this long delay, we need not go farther than the condition of Scotland, miserably poor, and distracted by frequent conspiracy and war. The efforts which began with Monteith in 1694 are accounted for by the circumstance that, in that year, the powers of this college were extended from the city to a considerable part of Scotland, but even then the political condition of Scotland offered little encouragement to the cultivation of science. The union with England took place only in Elliot's time, and it was thirteen years after this event that the school was opened by Monro.

Even then, the formation of the school was due to the forethought and guidance of one whose name deserves mention and honour. This was JOHN MONRO, the father of Alexander Monro. An army surgeon of good Scotch family and education, he had settled in Edinburgh in 1700, and joined the Surgeons. An able, accomplished, amiable man, he rose high as a practitioner, and was President of the Surgeons in 1712–13. As a surgeon in King William's Army, he had seen the necessity for improved medical education, and, as a travelled man, he knew what medical education was on the Continent. His affection for his only son, and his desire to see a Medical School established in Edinburgh, became united in the idea of his son being the instrument. It was henceforward the idea of his life. He educated his son for it, and,

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these lectures:—"There has of late been taught here, and with some considerable success, at the *Surgeons' Hall*, the whole art of medicine in a systematical way" (Thomson's Life of Cullen, 1832, i. 8). The following occurs in the Surgeons' Records, 18th October 1726:—"Allowed William Græme the use of the theatre for his prelections" (MS. from Dr Gairdner). In regard to the teaching of St Clair, Rutherford, Plummer, and Innes, and their appointment as professors in the University, on 9th February 1726, see Bower, ii. 204, 205, and 212; Dalzel (History of the University of Edinburgh, 1862) ii. 416; Fothergill in Thomson's Life of Cullen, Appendix, Note A; and Annals of the Parish of Colinton, by Thomas Murray, LL.D., Edin. 1863. In regard to Alston's lectures, compare Thomson's Life of Cullen, Appendix, Note A.; Bower, ii. 180 and 321; Life of Alex. Monro, pp. 11 and 12; and Dalzell, ii. 407, 413. In regard to the appointment of the first Professor of Midwifery, see Council Records, 9th February 1726 (Bower, ii. 254), which contains also the views of the Council in regard to licensing and registering midwives.

when the time came, communicated his plan to the Physicians and Surgeons, by whom it was well received. It was part of his plan to persuade others to join with his son; and when the college part of the scheme was fairly launched, he saw the necessity for an hospital, and set his son to write and work for it. To this far-seeing and good man must be assigned the merit of the idea, and of being the organizer of the scheme, the success or failure of which was to depend on his son.[1]

ALEXANDER MONRO.

Young Monro was fortunate in having a father whose high professional and social position secured for his son every advantage of education which Edinburgh and her University could give, and whose chief care and pleasure was the education of his only child. Having, under the circumstances naturally, shown an early inclination to the study of medicine,[2] he was bound apprentice to his father. By his father's influence, and his own early enthusiasm, he was admitted to the opportunities which the Edinburgh surgeons could give him of assisting at post-mortem examinations, which, with the little anatomical instruction given by Drummond and M'Gill, some instruction in pharmaceutical plants by Mr George Preston, and in chemistry by Dr Crawford, and what experience he obtained as his father's apprentice, constituted all the medical education which Edinburgh could then give.

John Monro's plan being to educate his son to be a teacher of anatomy, Alexander was now, at the age of 20, sent to London and thence to Paris and Leyden, between which he spent two years in the study of anatomy and other branches of medicine. It was in London, under Cheselden, that Monro learned anatomy, and how to teach it. He occupied himself chiefly in "assiduously dissecting human bodies, of which he was furnished with more than, with the utmost application, he could make use of."[1] Cheselden had already been teaching anatomy and surgery for seven years, was an enthusiastic teacher and eloquent lecturer, and encouraged his students to observe and think for themselves.[2] Amid such opportunities and influences, it may easily be imagined how a young man in Monro's position would expand. Nine years Monro's senior, Cheselden and he were kindred spirits, and formed a lasting friendship. Before leaving London for Paris he sent home to his father a number of anatomical specimens which he had prepared, and received the encouraging reply that, if he continued as he had begun, Mr Drummond was ready to resign his professorship of anatomy in his favour, on his return to Edinburgh. In Paris, besides attending medical classes at the hospitals, he had a course of anatomy from M. Bouquet, and performed the operations of surgery. At Leyden he became a favourite and admiring pupil of the great Boerhaave, then 51 years of age.[3] Raw, the professor of anatomy and celebrated lithotomist, was too ill to teach at the time, but we find Monro explaining to the Leyden students the differences between the structure of the human body and that of animals which he had just dissected.[4]

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[1] References to John Monro occur in the Life of Alex. Monro, especially pp. 10, 11, 12, and 19; and Gairdner, p. 13. "About the year 1720, his father communicated to the Physicians and Surgeons of Edinburgh a plan which he had long formed in his own mind, of having the different branches of Physic and Surgery regularly taught at Edinburgh, which was highly approved of by them" (Life, p. 12). On page 19, there is a pleasing picture of the father's old age, spent at a country seat in Berwickshire, happy in the renown of his affectionate son and in the success of "his favourite plan," "the founding of a Seminary of Medical Education in his native country." On putting together the various statements regarding his intentions and exertions there can be no doubt that John Monro is fully entitled to the merit which I have assigned to him.

[2] Life of Alexander Monro, by his eldest son Dr Donald Monro, of London, 1781,—prefixed to the Quarto Edition of Monro's collected works, published by his son Alex. Monro *secundus*. All the subsequent notices of Monro are from this Life, except Bower's, which gives some additional information obtained from a manuscript autobiography of Monro *primus*, lent to Bower by Alex. Monro *tertius*. (Bower, ii. 168.)

Returning to Edinburgh in the autumn of 1719, he was examined and admitted by the Surgeons (20th November 1719), and two months afterwards (29th January 1720), on their recommendation to the Town Council, elected professor of anatomy in the University. He was then 22 years of age, having been born on September 8, 1697. He had eight months to prepare for his first course, and meanwhile great exertions were made by the father in and beyond Edinburgh to attract notice to his son's undertaking. He commenced with an attendance of 57 students.

He continued to teach during the first five years in the theatre in Surgeons' Hall,[1] when he removed his class to the University buildings. The removal to the University arose out of the circumstance of a mob having (in April 1725), in consequence of the supposed violation of graves, threatened the demolition of Monro's establishment in Surgeons' Square. The city was in an uproar, Surgeons' Hall was beset, and the tumult was quelled only by the energetic action of the magistrates (Council Records, Bower, ii. 183). I have already alluded to this practice having commenced, or been suspected before Monro's time (in 1711), but the Surgeons' Records bear evidence of increased alarm on this score after Monro opened the anatomical school. 24th January 1721—"It was this day ordered that a clause should be put into all indentures of apprentices against violation of the churchyards." 17th January 1722—"On a complaint by the Lord Provost of violation of the Greyfriars Churchyard, the apprentices were obliged to subscribe an obligation that they would altogether avoid raising the dead." 2d March 1725—"Ordered that upon the professor of anatomy lodging ane humane body in their Hall or Theatre, he forthwith, by a letter, acquaint the Deacon, Theasarer, or, in case of their absence, the eldest Deacon in town—and that it was regularly procured, and obtain their allowance for the same. But in case the Professor do not in the terms of this order signify, &c.—and obtain their allowance as said is, the Professor is hereby required immediately, in obedience to this order, to remove and carry off the subject, and shall be answerable to the calling for any consequences that may arise from his bringing in or carrying off the said subject."[2] The Surgeons were not likely to regard with patience the prospect of their Hall being burned down, as the return for giving the use of their theatre; the Professor was as little likely to relish the probability of his museum being destroyed, or of having to submit to the new restrictions in regard to subjects which the Surgeons now laid upon him. Monro accordingly (20th October 1725) applied for, and obtained a theatre in the University.[3] He asked the Town

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[1] Autobiog., Bower, ii. 172. Here his career was nearly cut short by the effects of handling the suppurated lungs of a phthisical subject, when his hands had been accidentally scratched. It was thought that, at least, he would lose one arm.

[2] Monro appears to have been the most active member of a society of students which Cheselden encouraged his pupils to form, and which met in his theatre. His subsequent work on the Bones, and his account of the Nerves and Thoracic Duct, had their origin in the mutual improvement lectures at this society; and the first sketches of the two latter were added to Cheselden's anatomy.

[3] This mutual regard continued, and Monro sent patients from Scotland to consult Boerhaave. This connexion, as well as the fact of St Clair, Rutherford, Plummer, Innes, and Alston, having also studied under Boerhaave, may account for the extraordinary hold which the doctrines of Boerhaave so long maintained in the Edinburgh school. (See Thomson's Life of Cullen, i. 118.)

[4] This study had formerly also the interest of the discussion whether Galen had described from man or from quadrupeds, which had excited so much feeling since the revival of anatomy by Vesalius. Sylvius, for instance, defended the statement of Galen that the human sternum is composed of seven bones, saying that "in ancient times the robust chests of heroes might very well have had more bones than our degenerate day can boast."

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[1] This was the building known, since 1832, as old Surgeons' Hall, in the centre of the south side of Surgeons' Square, now belonging to the Royal Infirmary, and occupied on occasion as a Fever Hospital. It was built in 1697. Dr Gairdner's Historical Sketch contains a lithograph showing the Hall as it originally was. It was probably built on the site, or as an extension of the first Hall ("Conveening House") which the Surgeons resolved to build in 1669. The 1697 Hall contained the theatre which the Town Council had required the Surgeons to provide in the grant of 1694. This theatre was, in 1697, the scene of the first public anatomical demonstrations in Edinburgh, and continued to be so used till 1725, when Monro removed his class to the University buildings. The present Hall, in Nicolson Street, was inaugurated in 1832. (Gairdner, p. 22, 24, 35.)

[2] MS. extracts from Surgeons' Records, from Dr Gairdner.

[3] On 14th March 1722, Monro had, on petition, been made professor of anatomy, *ad vitam aut culpam*, his first appointment in 1720 having been, like that of his predecessors, "during the Council's pleasure." This was done notwithstanding the Council's general Act of August 1719, that professorships

Council "as patrons of the Universitie to allow him, as Professor of Anatomy therein, a theatre for public dissections." The Council appointed a Committee "to appropriate ane fitt place in the said University, to be adapted for the said theatre."—(Council Records, Gairdner, p. 18.) Ten years afterwards, another Council Minute occurs:—"21st January 1736.—Mr Monro, Professor of Anatomy, upon a petition from him, allowed a room in the College, during the Council's pleasure, and that for teaching his private sessions only" (Dalzel, ii. 406). The first was a grant for a lecture room; this must mean for a dissecting room.

The attendance on Monro's lectures increased rapidly. With the very successful beginning of 57, the average attendance during the first ten years was 67; during the second decennium, 109; during the third, 147.[1]

Monro's course extended from October to May, and embraced surgery as well as anatomy. His lectures were illustrated by dissections of the human body, and also, for comparison, of the bodies of quadrupeds, birds, and fishes. After giving the anatomy of each part, he treated of its diseases, especially of those parts requiring operations. He showed the operations on the dead body, and the various bandages and apparatus; and concluded the course with some lectures on physiology. He continued to give such a course uninterruptedly for thirty-eight years. He did not read his lectures. Even in giving the history of anatomy, with which he began his course, he spoke without the assistance of notes, except for the names and dates.[2]

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should be held during their pleasure. They saw the importance of it in Monro's case, and it became a precedent which has been adhered to ever since. (Council Records, Bower, ii. 182.)

[1] The number in each year from 1720 to 1751, is given by Bower (ii. 179) as communicated to him by Monro *tertius*.

1720 ...	57	1730 ...	83	1740 ...	130	1750 ...	158
	68		82		136		144
	62		107		131		
	68		104		164		
	58		111		150		
	51		95		76		
	65		131		182		
	81		123		165		
	70		119		160		
	90		137		182		
	670		1092		1476		

The sudden fall in 1745 is accounted for by the rebellion which broke out in autumn, Edinburgh being in the hands of Charles Edward and the Highlanders when the session began. The battle of Prestonpans was on 21st September, and Monro was active on the field afterwards, assisting the wounded and in getting them brought into Edinburgh.

[2] There is a tradition that one of the Monros, on coming in to his first lecture, turned and fled, and was brought back by his father. The only foundation for this, is the occasion, soon after Monro's appointment, on which John Monro had invited the physicians, surgeons, and magistrates, to hear the first of a few lectures which he had prevailed on his son to give and illustrate by

Six years after he had begun to teach, Monro published his great work on the Human Bones, which went through eight editions in his life time, and was translated into most European languages. The early publication and great reputation of this work must have tended materially to give fame to the Edinburgh school. All Monro's writings have been reprinted in one large quarto volume. They are full of fact and thought, expressed in few and plain words. It is, however, impossible for me, in these limits, to give anything like a critical notice of the writings of the various anatomists of whom I have to speak, or to do more than merely mention them.

Monro attended the hospital and "frequently, while he continued Professor of Anatomy, gave lectures on the chirurgical cases" (Life, p. 14). It does not appear whether he took his turn, with his brethren of the Incorporation, as one of the acting surgeons of the Infirmary, or whether his clinical lectures were delivered on the cases under treatment by the acting surgeons. He was not an operating surgeon, at least in the greater operations. He appears to have been in extensive practice, and his advice to have been sought as that of a scientific practitioner in all kinds of cases. Of fifty-five papers, or essays, in his collected writings, there are, in anatomy and physiology, seventeen; in surgery, nineteen; in medicine, fifteen; in midwifery, four.

Monro has the chief merit in the establishment of two institutions. Various public bodies took part in establishing the Royal Infirmary, but Monro and Lord Provost Drummond were the active spirits of the movement. When the present building was at last commenced in 1738, they were the "building committee;" great public enthusiasm prevailed in collecting the money, and Monro and Drummond regularly paid out the workmen's wages with their own hands. Hence the professor of anatomy is *ex-officio* a manager of the Infirmary. The other was a Medical Society which, after publishing several volumes, and passing through an intermediate stage, as the "Philosophical Society," was finally, in 1782, incorporated as the Royal Society of Edinburgh.[1]

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his specimens. Coming into the Hall, the sight of this unexpected company threw him into such confusion that he forgot the words of the discourse which he had committed to memory, and he had left the manuscript at home. Obliged to speak extemporaneously and trusting to his knowledge of the subject, he found that he could speak easily and well; and ever afterwards acted on this discovery of his own powers.

[1] The Society was begun before 1732. Monro was secretary, and editor of the six volumes of "Medical Essays and Observations" which it published. It became the "Philosophical Society," some time before the rebellion of 1745, David Hume and Monro being joint secretaries. In 1758 Monro *secundus* was made joint medical secretary with his father. The Society published three volumes of "Essays Physical and Literary." Most of Monro's papers, and his son's earliest papers, appeared in the volumes published by these societies. To these succeeded the "Medical Commentaries," 20 vols., 1773–95; the "Annals of Medicine," 8 vols., 1796–1804; after which commenced the "Edin. Med. and Surg. Journal."

After resigning the duties of the anatomical chair to his son in 1758, at the age of 60, Monro devoted himself during the remaining nine years of his life to practice, and to teaching as one of the professors of clinical medicine.[1] During the last five years of his life he suffered more or less from a painful disease which at last cut him off on 10th July 1767, near the age of seventy.[2]

Monro is invariably referred to as having been in every relation of life, a most admirable and lovable man; sincere, modest, without jealousy, benevolent, kind to his students; an able and active, and at the same time a calm and placid man. He had family and friends influential and plenty, but the work he had to do was of a kind at which friends could only stand and look on. He had to do a new thing in Edinburgh; to teach anatomy, and to provide for the study of it, in a town of then only thirty thousand inhabitants, and in a half civilized and politically disturbed country; he had to gather in-students, to persuade others to join with him in teaching, and to get an Infirmary built. All this he did, and at the same time established his fame not only as a teacher but as a man of science, and gave a name to the Edinburgh school which benefited still more the generation which followed him. This really great and good man, therefore, well earned the title, often given him, of father of the Edinburgh medical school.

ALEXANDER MONRO *Secundus.*

The second Monro was appointed professor of anatomy at the age of twenty-one, before he had taken his degree, or finished his studies in the University. He was a clever boy, had received an excellent home and University education, and it was his father's plan that he should succeed him. He showed an early inclination to medicine, especially to anatomy, and studied under, besides his father, Alston, Rutherford, Plummer, Whytt, and Robert Smith. He must have begun early and worked earnestly at anatomy, as we find him relieving his father of most of the evening lectures while yet only in his twentieth year, and probably in the third formal winter session (1753–4) of his medical studies. His father having that year found the lecture room too small for the increasing class had resolved to repeat the lecture in the evening, but finding this irksome, gave over the evening lecture to young Monro, who acquitted himself well. He was appointed colleague and successor to his father on 19th June 1754.[1]

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[1] The University conferred on him the degree of M.D. in 1756, and he then became a member of the College of Physicians. Dr Duncan, senior, who wrote a notice of Monro in 1780, mentions that he attended his last clinical course, and how much pains he took as a physician and teacher at the Infirmary.

[2] As the symptoms plainly indicated, it was found to be disease of the rectum at last opening into the bladder. For more than a year before his death he suffered great pain, which he bore without repining, and he viewed his approaching death with the calmness worthy of his character. In his early life he was liable to spitting of blood on catching cold, and through life to feverish attacks, which he attributed partly to his parents having had him bled twice a-year in his youth, as a preservative of health. He was of middle stature, robust, and active. His portrait, and also that of his father John Monro, may be seen in the collection at Surgeons' Hall. The engraving prefixed to his works presents the same substantial and pleasing expression. The character of Monro by Lavater, on seeing his portrait, without knowing who it represented, may be seen in Hutchison's Biographia Medica (ii. 161). It is not much amiss, but too rhapsodical, and too long to be quoted here. Lavater was not deceived by the trick of sending him a very different portrait for that of Goethe, but when he saw Goethe he was astonished to find him so unlike what, according to Lavater's fancy, he ought to have been.

The argument in the father's petition to the Town Council was —that by and by he would require a successor, that no one could be expected to forego other prospects and devote himself to anatomy without due encouragement, but that anatomy is the foundation of the school and requires to be taught by one who is master of his business; that he himself was so encouraged by the promise of the chair when yet a student; that his youngest son Alexander had appeared to him for some years to have the necessary qualities, and had already proved that he was equal to the office; that if they would now appoint him, he would have the young professor educated under the best masters in Europe, and that he should have all his father's papers, books, instruments, and preparations, and all the help he could give him. The petition was supported by his colleagues in the University, and was at once granted. The appointment fortunately proved an excellent one.

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[1] There are discrepant statements as to when, and at what age, he was appointed. Besides scattered references and Town Council minutes, there are the following more formal notices of Monro *secundus*. 1818, Harveian Oration, by Monro's colleague and friend Andrew Duncan senior; 1835, the sketch in Chambers' Biographical Dictionary of Eminent Scotchmen (iv. 18), chiefly taken from Duncan; 1840, "Essays and Heads of Lectures on Anatomy, Physiology, Pathology, and Surgery, by the late Alex. Monro *secundus*, with a Memoir of his Life, by his Son and Successor"—the "Memoir" not a very satisfactory performance, but containing valuable letters from Drs Gregory, Robertson, and Carmichael Smyth. The writers agree in giving 12th July 1755 as the date at which he was made professor; and, as to age, the Memoir says he was then only 20, Duncan that he had just entered on his 22d year, and Chambers' Biog. that he had just entered on his 23d year. The date of the Town Council minute (given in full by Bower, ii. 369, and confirmed by Dalzel's extracts from the Town Council Records, ii. 425) is 19th June 1754. Monro was born either in March or May (Duncan and Chambers, 20th March; Memoir, 20th May) 1733. He was, therefore, when elected professor, on 19th June 1754, twenty-one years of age, and either three months, or one month, more. This accords with the statement (Bower, ii. 372) that the petition was "accompanied with a paper, attesting his age to be above twenty-one years." If the date 12th July 1755 refers to the subsequent ceremonial of admission by the Senatus, the age given in the Memoir would be still farther from being correct; Duncan's words are "admitted into the bosom of the University;" in the Memoir it is "appointed." But none of them refer to the Town Council minute, which is the appointment. Dalzel gives also, from the Town Council Records—"10 July 1754, Alex. Monro senior, and Alex. Monro junior qualify in Council." And "18 July, Commission to them signed."

In the list of the Senatus Academicus, given in the appendix to Professor Craufurd's "History of the University of Edinburgh" (1808, p. 170), the dates given for Monro *secundus* are, 12th July 1755 (instead of 19th June 1754); for his being made professor of surgery as well as of anatomy, 20th August 1777 (instead of 16th July 1777); and for his son being conjoined with him, 15th December 1798 (instead of 14th November 1798). These dates evidently refer merely to the Senatus' minutes of admission, following some time after the Town Council minutes which conferred the appointments.

Having completed his studies, and taken his degree in the University, in October 1755, the bargain for his farther anatomical training was faithfully carried out by sending him to London, Leyden, Paris, and Berlin, between which he spent two years and a-half, including three winter sessions, chiefly in the study of anatomy. During his short stay in London, he attended the lectures of William Hunter, who was fifteen years his senior; in Leyden he studied under Albinus, but it was from the German anatomist, Meckel, that he had the most valuable part of his foreign training. He was not only the pupil of this minute and scientific anatomist, but lived in his house during his long stay in Berlin, having thus every opportunity of becoming familiar with the newer methods of anatomical research. To this period, and his obligations to Meckel, he often afterwards referred in his lectures. Thus Monro, instead of being plunged at once into the time-absorbing occupation of teaching, enjoyed the inestimable advantage of having a few years, free from other care, to work silently at the science which he was to teach.

Returning to Edinburgh in the summer of 1758, now twenty-five years of age, he commenced his duties as professor, in winter. The father, whose strength had begun somewhat to fail, after giving only a few lectures of the course, gave place to the son. He commenced boldly. The father had embraced and to the last taught Leuwenhock's doctrine respecting the blood. This young Monro began by controverting. The novelty of his matter combined with the clearness of his style, is described by one who was present as having acted like an electric shock on the audience.[1] It was at once seen that he was master of his subject and of the art of communicating knowledge to others: his style was lively, argumentative, and modern compared with that of his more venerable colleagues; and from the beginning onwards, for half a century, his career was one of easy and triumphant success.

As a lecturer, Monro is described as clear, earnest and impressive, eloquent without display, and at the same time grave and dignified. An old pupil (Dr Robertson of Northampton, in Memoir) speaks of "that copious stream of information—medical, surgical, physiological, and pathological,—that flowed from him almost without art or effort." For fifteen years he had written only the heads of his lectures, which he frequently improved, till he purchased a copy of his own lectures from a pupil; but, following his father's example, he did not even use notes in the lecture-room.[1]

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[1] Dr Carmichael Smyth (Memoir, p. 13). In young Monro's dedication of his graduation thesis to his father, he goes on to say—"tibi, PATER, PRÆCEPTOR OPTIME, Filius, Discipulus, studiorum Æmulus, Dissertationem hancce, animi monumentum grati, dicatum accipias, precor."

The attendance on the anatomy class in each of the first thirty-one years under Monro *primus*, has already been noticed. Monro *secundus* has given the attendance during the seven decennial periods up to 1790.[2] His numbers divided by ten will give the average yearly attendance during each period.

From 1720 to 1730,	670.	Average yearly attendance,	67
" 1730 " 1740,	1090.	" "	109
" 1740 " 1750,	1476.	" "	147
" 1750 " 1760,	1327.	" "	132
" 1760 " 1770,	1942.	" "	194
" 1770 " 1780,	2870.	" "	287
" 1780 " 1790,	3425.	" "	342

The total (12,800) he farther divides thus,—1720–1759 (Professore Alexandro Monro, Patre), 4431; 1759–1790 (Professore Alexandro Monro, Filio), 8369. In Monro's mode of enumeration, the same student is reckoned more than once. The number of individuals educated by Monro may be reckoned at one-half to one-third of that obtained by his method. Monro *secundus* taught for seventeen years afterwards (till the beginning of 1808–9), and his class is said to have increased to 400. Dr Gregory (Letter in Memoir, p. 10) says the attendance was "generally from 200 to 400 every year," and that, during the whole "fifty years or more that he taught anatomy and surgery, his lectures were attended in all by 14,000 students." Deducting the 8369, this would leave 5631 for these seventeen years, with an average attendance of 331; but as the number of students of medicine in the University rose from under 500 in 1790, to over 800 in 1807–8, there need be no difficulty in accepting Dr Gregory's statement as literally true, that Monro's class reached to 400.[3]

Except probably, during the earlier years, the above numbers fall considerably short of representing the entire number of students of medicine attending the University. Monro *primus* mentions, in 1754 (Town Council Minute, January 19, 1754), that the number of students of medicine in Edinburgh had been "more than 200 for many years past." The number of students in each Faculty from 1790–91 to 1821–22, is given in the second and third appendix to Craufurd's History of the University. Through Professor

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[1] The following is from the pen of Monro *tertius*, in 1840. "He was totally devoid of conceit, and unlike many professors who have lectured for nearly half a century, did not remain satisfied with the lectures he had written at the beginning of his career" (Memoir, p. 151).

[2] Medical Commentaries, vol. xv., p. 410, 1791, in which may be seen a copy of a document containing this information, which was deposited by Monro *secundus* in a bottle below the foundation stone of the new anatomical theatre in the University, on 31st March 1790.

[3] I may mention that in the year 1853–4, during which I taught the anatomy class in the University, in the absence of my friend the present professor from illness, my own pupils being joined with those in the University, the number in the winter session was 447.

Balfour, Dean of the Medical Faculty, Mr Alexander Smith, Secretary to the University, has kindly furnished me with the number of students of medicine entered in the matriculation list of the University in each year as far back as 1763–4, previous to which the form in which the names are preserved is that of the various class lists. It will suffice to give the average of decennial periods, the first being the average of seven years.

From 1763 to 1770.	Average 240
„ 1770 „ 1780.	„ 301
„ 1780 „ 1790.	„ 382
„ 1790 „ 1800.	„ 560
„ 1800 „ 1810.	„ 739
„ 1810 „ 1820.	„ 820
„ 1820 „ 1830.	„ 849

In several years the number exceeded 900, as in 1810–11, 1814–15, 1815–16, 1824–25, and 1825–26. In 1810–11, the number was 934; in 1824–25, it was 932.

In their applications to the Town Council, the Monros did not fail to remind the civic rulers that, "besides the youth being well educated," the medical school brought annually a large sum of money to be spent in the city. On 19th June 1754, at least £10,000 a-year is mentioned; and on 4th July 1764, the Council is reminded that during the past forty years the town has received £300,000 from the students of anatomy. This mode of reckoning allows £50 a-year for each student. In a memorandum by Monro *secundus*, of date October 12, 1807,[1] he reckons that the students who attended his father (the number of whom he here gives as 3451, from 1720 to 1758) brought, at the rate of £50 *per annum*, £172,550; and states that "During the last 48 years, 13,404 students have attended us (Dr Monro senior and his son), who, at the rate of £80 *per annum*, have expended in all £1,072,320. During this period 5831 students, or nearly two-fifths of the number, came from England, Ireland, and other countries; and without supposing that they expended more than the average above stated, they brought into Scotland £466,480 sterling."[2]

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[1] Annals of the Parish of Colinton, p. 136, by Dr Thomas Murray, who informs me that he saw the original.

[2] I find the following with reference to the Monros' anatomical rooms and museums:—

It has been already mentioned that Monro *primus* obtained in the University, in October 1725, a "theatre for public dissections;" and, in June 1736, a room for "teaching his private sessions only." On 4th July 1764 (Town Council Records, Dalzel ii, 434), he applied for and obtained £300 to build a new theatre, he advancing the £300, and to be repaid, £100 annually for three years. On 19th December of the same year, the Council agreed to pay "not only the £300, as formerly, to Dr Monro for his theatre, but afterwards £80, 19s. 2d. in June 1768, upon his granting, before receiving the first payment (namely, the first £100 of the £300), an obligation to convey to the University, at his death, his whole anatomical preparations, unless the circumstances of his family should alter, so as to make it necessary for him to dispose of them for their behoof." Dalzel gives these proceedings of Council as relating to Monro *primus*. In petitioning for the appointment of his son, in 1754, he had

Monro's earlier writings were chiefly controversial, disputing claims to priority in discovery with William Hunter, Hewson, and others. He had taught for twenty-five years, and was fifty years of age before he began to publish the great works on which his more permanent reputation as an anatomist rests. Beginning in 1783, these appeared at intervals during the next fourteen years, the last in 1797, a year before his son was conjoined with him in the anatomical chair. My limits will permit me to give merely a list of his works.

In 1754, while still a student, two papers, on the Seminal Vessels, and on Gravid Uteri, in Vol. I. of the Physical and Literary Essays.

1755, Graduation Thesis, "De Testibus et Semine in variis Animalibus."

1757, when in Berlin, "De Venis Lymphaticis Valvulosis."

1758, "Observations, Anatomical and Physiological, wherein Dr Hunter's Claim to some Discoveries is examined;" and, "Answer to the Notes on the Postscript to Observations Anatomical and Physiological."

1770, "Examination of the Claim to the operation of Paracentesis Thoracis, and to the Discovery of the Absorbents in Oviparous Animals."

Several papers in the "Essays Physical and Literary," vols. ii. and iii., and in the "Medical Commentaries," vols. iii. and v.; especially in 1771, on the Effects of Opium, Ardent Spirits, and Essential Oils.

1783, "Observations on the Structure and Functions of the Nervous System."

1785, "The Structure and Physiology of Fishes explained and compared with those of Man and other Animals."

1788, "Description of the Bursæ Mucosæ of the Human Body."

1792, "Description of a Human Male Monster," Trans. Roy. Soc.

1793, "Experiments on the Nervous System, relative to the Nature and Effects of Animal Electricity."

1794, "Observations on the Muscles, and particularly on the Effects of their Oblique Fibres."

1797, "On the Brain, the Eye, and the Ear."

Many Libraries, public and private, contain M.S. volumes of notes of his Lectures on Anatomy, Lectures on Physiology, and Lectures on Surgery.

Although it might well be believed that Monro had work enough with such a class, and with his anatomical researches, he was at the same time busy in practice, being, in fact, the leading physician of his time. In the words of Dr James Gregory, his junior by twenty years, his colleague, and, as a physician, so far his rival, for upwards of thirty years, Monro was "for more than half a century at the head of the great medical school of Edinburgh, and for the greater part of that time unquestionably at the head of his profession in Edinburgh and in Scotland." (Letter in Memoir, p. 9.) In his interesting and characteristic letter, Gregory goes on

engaged that he "should have all his father's papers, books, instruments, and preparations." The above £80, 19s. 2d. was probably for what the theatre cost over the £300, and, in paying it, the Council had taken occasion to ask an obligation that his anatomical preparations should be left, at his death, to the University. In the course of the erection of the new University buildings, the foundation stone of the part assigned for the anatomical theatre and rooms was laid by Monro *secundus*, on 31st March 1790 (Med. Commentaries, xv. 410, already referred to); and the new theatre was opened by him at the commencement of the winter session, on the last Wednesday of October 1792 (Med. Com. xvii. 528). In 1800, Monro *secundus* presented his museum to the University, with a descriptive catalogue, which was afterwards printed (Memoir, 150-1, and Bower, iii. 365).

to describe Monro as his very ideal of a practical physician and consultant. The illustrious Cullen began as professor a year after Monro's appointment, but had the comparative disadvantage of being a stranger in Edinburgh. Monro's name, however, is not to be put along side of Cullen's as a great physician, nor has he left his mark on medicine as Cullen has. His true reputation was as anatomical teacher and anatomist. Monro was also consulted in important surgical cases, though not himself an operating surgeon. He claimed to be also professor of surgery, and, on 16th July 1777, obtained a new commission from the Town Council, expressing that he was professor of surgery as well as of anatomy.[1]

Although in 1798 his son was conjoined with him in the chair, he continued for ten years to give the greater part of the course. Dr Gairdner informs me that he heard him deliver the introductory lecture in session 1808-9, and that it was the last lecture he gave. He at the same time retired from practice, after which he lived for nine years, enjoying a peaceful old age. He died on 2d October 1817, in his 85th year.

Monro was a man of middle stature, vigorous and athletic, with a large head, and a countenance expressive of intelligence, solidity, and humour. Busy as he was he enjoyed society, in which his anecdotal powers shone; he was an enthusiastic admirer of the theatre;[2] and he took great pleasure in cultivating his garden, and in planting and ornamenting the estate of Craiglockhart, which his success in his profession had enabled him to purchase in 1779.[3]

In regard to how far the second Monro deserved his great reputation, it must be admitted that he had absolutely no difficulties to contend with as his father had, that he was born to a great name and a ready-made position, that he had every advantage which education, friends, and place could secure, and that his position was one in which a somewhat better than ordinary man is, in his life time, apt to be mistaken for a great one. In the words of our great dramatist, some men are born great, some men achieve greatness, and some have greatness thrust upon them. The first Monro certainly achieved his greatness, and the second as certainly was born great. But the most dangerous of successions is that to a famous father, and the most trying position for reputation is that of having brilliant colleagues. Among the colleagues of the second Monro, in Medicine, were Cullen, Joseph Black, the Gregorys, the Rutherfords, the Homes, John Hope, and latterly Dr Duncan, senior, and Charles Hope; and in the University at the same time were Adam Ferguson, Dugald Stewart, Playfair, Dalzel, Robison, Hugh Blair, and Principal Robertson. It was a period of great men, and among all these men Monro held his place intellectually and socially, and in his own Faculty was all that is implied in describing him as the acknowledged head of the medical school.

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[1] That he had resolved to follow medicine rather than surgery, is seen in his joining the College of Physicians on his return from the Continent in 1758. It may be mentioned that, on 15th June 1757, on the request of Monro *primus*, a new commission was granted to him and his son "as they were now both Doctors of Medicine, which none of them had been formerly" (Dalzel, ii. 427). This can only have been to gratify the father. The son graduated before the father, having taken his degree in October 1755, while it was conferred on the father on 1st January 1756.

[2] "No man enjoyed more heartily the laugh even at his own profession, when Foote personated the President of the College of Physicians, and Weston was subjected to examination, in the character of Dr Last. Nay, it has even been alleged, that Dr Monro enriched the wardrobe of the theatre, by sending his own red cloak to be the outer garment of the Mock Doctor." (Duncan, Harveian Oration, 1818.)

[3] Annals of the Parish of Colinton, p. 135. Dr Murray informs me that Monro did not reside at Craiglockhart, and that the mansion-house was built only in 1835 by the third Monro.

To be at the same time the successful teacher of so splendid a class, the leading physician of his day, and the author of works of original research in anatomical science, formed a rare combination, the effect of which, extending and accumulating over half a century, may enable us to understand the greatness to which the reputation of the second Monro grew, both at home and abroad, and the honour in which his name is held among anatomists, and in the Edinburgh School.

ALEXANDER MONRO *Tertius*.

The third Monro was appointed joint-professor with, and successor to, his father on 14th November 1798. He had graduated in medicine at the University in the previous year (on 12th September 1797), and was nearly twenty-five years of age when he received the appointment to the anatomical chair. The father, however, continued for ten years after this to be the chief occupant of the chair, giving during the first two years the whole of the course, and during at least six years more, the greater part of it; retiring, as already mentioned, after giving the introductory lecture in session 1808-9. Monro *tertius* continued professor till 1846, retiring from the chair before the end of the winter session 1845-6. He was thus, in all, for 48 years professor of anatomy, the reputation of the chair depending on him for 38 years, from the time when he became sole professor. The influence of Monro *tertius* on the Edinburgh school falls to be considered rather with a later period. The minute of Town Council containing his appointment, with the reasons assigned, has not been before published, and may be read with interest.

14th November 1798.—"To the Right Honble. the Lord Provost, Magistrates and Council of the City of Edinburgh, the representation and petition of Dr Alex. Monro, senior, Physician and Professor of Medicine, Anatomy and Surgery in the University of Edinburgh. Dr Monro begs leave to represent to the Honble. Patrons of the University, that for teaching properly some of the branches of Medicine, particularly chemistry and anatomy, where much labour and many experiments are necessary, not only for illustrating the doctrines which are taught, but for the improvement of the science, it is much for the advantage of the University and of the students that to a Professor advanced in life, a younger colleague, disposed to co-operate with him, should be conjoined. The late appointment of an assistant to the Professor of Chemistry is a striking proof of the propriety of such a measure. Dr Monro was also very sensible that in consequence of his own early appointment as assistant to his father, he devoted himself much more to the study and practice of anatomy, and of course became much better qualified to teach than he should have been without such a prospect before him. As yet his zeal for the improvement of this branch and his assiduity in teaching it are unabated; but he daily becomes more and more sensible of the advantages the students would derive from his having conjoined with him a colleague more capable of undertaking the laborious parts of his course, and of prosecuting inquiries and performing experiments for the farther improvement of the science. He therefore humbly petitions the Honble. Patrons of the University that they will be pleased to nominate as colleague and successor to him his eldest son Alexander, who is now nearly twenty-five years of age, and who after having attended for eight years past his courses of lectures, and, during that period, all the other medical classes repeatedly, and having received last year from this University the degree of Doctor of Medicine, has since that had the advantage of attending the anatomical and other medical classes in London, and the practice of the London Hospitals. If the Honble. Patrons are pleased to appoint his son, it is his intention to return to London and afterwards prosecute the practice and study of Anatomy in the most celebrated Universities of Europe in order that nothing may be wanting to place the teaching of this branch on the most extensive and respectable footing. Before presenting this petition to his Honble. Patrons, Dr Monro thought it a duty he owed to them as well as to his colleagues in the medical department to show his petition to them for their opinion, as their interests were deeply concerned, and that they had had the best opportunity of observing the diligence and knowing the qualifications of his son, and he has the satisfaction to find that they unanimously approve of his petition and join in the prayer of it. He is with due respect their most humble servant, Alexander Monro, Professor of Medicine, Anatomy and Surgery. September 24th, 1798.

"Thereafter the Act of Council dated the 7th day of March 1798 against electing any professor in the College until a vacancy shall happen, was read, when old Provost Elder represented that though he approved of the Act of Council against conjoining persons with professors then in office, yet in his opinion there may be cases where such a resolution ought to be departed from, and in his opinion a stronger case than the present could not occur, not only for the reasons mentioned in the petition, which are very strong, but also on account of the unanimous opinion of the professors of Medicine in the College, bearing that the appointment of Dr Monro as a colleague to his father would be attended with much advantage to the students and to the University of Edinburgh. And therefore he moved that the Act of Council be rescinded in so far only as respects the present application; which motion was seconded by the Lord Provost, and which he the more readily did on account of being informed by some of the Professors that Dr Alexander Monro, junior, is already fit and well qualified to succeed his father. To which Bailie Henderson adhered and was unanimously agreed to.

"Thereafter read resignation by Dr Alex. Monro of the foresaid office, which is of the following tenour:—'I Dr Alexander Monro, Physician, hereby resign into the hands of the Lord Provost, Magistrates and Council of the City of Edinburgh, Patrons of the University, my commission from them of Professor of Medicine, Anatomy and Surgery, and at the same time, petition them to re-elect me into these offices and to conjoin with me as my colleague and successor my eldest son Alexander, Physician and Fellow of the Royal College of Physicians in Edinburgh.' Of which resignation the Council accepted and declared the foresaid office of Professor of Medicine, Anatomy and Surgery in the University vacant.

"All of which being taken into consideration the Council rescinded the foresaid Act of Council in so far only as respects the appointment of Dr Monro junior, and confirmed the said Act in other respects as tending to getting a better choice of candidates upon a vacancy, and the Council in this instance elect, nominate, and appoint Dr Alex. Monro senior, and his son Dr Alex. Monro junior to be joint Professors of Medicine, Anatomy and Surgery in the College of Edinburgh *ad vitam aut culpam* with the benefit of survivancy to the longest liver, upon the conditions following—viz.—Primo, that the said Dr Alex. Monro senior, or Dr Alex. Monro junior, or one or either of them, shall officiate and give regular lectures as formerly. Secondly, it is hereby declared that the said Dr A. M. senior and Dr A. M. junior shall be subjected and liable to such rules and regulations as the Magistrates and Council have already made or may hereafter make with respect to the said office, hereby giving and granting and disponing to them, or survivor of them, the fees or emoluments appertaining to the said office, and appointed the clerks to extend a commission in favour of Dr M. senior and Dr M. junior in the terms mentioned, and appointed Bailie Henderson to instal them in the foresaid office in the usual manner."

The writings published by Monro *tertius* are voluminous.

1797. Diss. Inaug. de Dysphagia.
1803. Observations on Crural Hernia.
1811. The Morbid Anatomy of the Human Gullet, Stomach, and Intestines. 2d ed. in 1830.
1812. Dissertation on the varied direction of the Fibres of the Muscles.
1813. Outlines of the Anatomy of the Human Body, 4 vols.
1818. Observations on the different kinds of Small Pox, and especially on that which sometimes follows Vaccination.
1825. Elements of the Anatomy of the Human Body, 2 vols.
1826. Observations on Spasm of the Canals for the Food, Bile, and Urine.
1827. Observations on Aneurism of the Abdominal Aorta.
1827. The Morbid Anatomy of the Brain.
1831. The Anatomy of the Brain, with some Observations on its Functions.
1842. The Anatomy of the Urinary Bladder and Perineum of the Male.

Monro *tertius* also engaged in practice as a physician. He spoke Latin well, and was fond of paintings. His talent as a teacher of anatomy was not great.

The periods of the three Monros may be noted shortly thus:—

Monro *primus*. Born 8th September 1697. Professor of Anatomy for 38 years (1720–1758), from the age of 22 to the age of 60. His son nominally joint-professor with him during the last 4 of these years. Retired from the anatomical chair 1758. Died 10th July 1767, aged nearly 70.

Monro *secundus*. Born 20th March (or May) 1733. Professor of Anatomy for 54 years (1754–1808) from the age of 21 to the age of 75—viz., nominal joint-professor with his father, 4 years; sole professor, 40 years; jointly with his son, 10 years. Retired in 1808. Died 2d October 1817, aged 84.

Monro *tertius*. Born 1773. Professor of Anatomy for 48 years (1798–1846), from the age of nearly 25 to the age of 72—viz., joint-professor with his father for 10 years, sole professor 38 years. Resigned the anatomical chair in 1846. Died 1859, aged 85, or 86.

The periods during which they were acting professors of anatomy were respectively 38, 50, and 38 years; and thus the three Monros occupied the Chair of Anatomy in the University for the long period of 126 years.

(*To be continued.*)

ARTICLE II.—*Report of Clinical Cases treated in the Surgical Wards of the Royal Infirmary, under the Care of* Professor SPENCE, *from October* 1864 *to October* 1865. By P. M. BRAIDWOOD, M.D., late Resident Surgeon.

THE cases recorded in the sequel were carefully and accurately reported during the Session, in the hospital journals, by Messrs Muir, J. M'Dougall, K. Anderson, D. Cunningham, Pearson, Buist, Wyllie, and Paton.

CASES OF ANEURISM.

CASE 1.—W. W., æt. 32, labourer, admitted Jan. 4. About four months ago, patient observed on the inner aspect of his right thigh a firm, throbbing swelling, of the size of a walnut. Origin spontaneous, and increase gradual. On admission, an aneurism as large as a small apple was found at the entrance of Hunter's canal. On compressing the femoral artery, pulsation ceased, but the tumour could not be completely emptied of its contents. Ordered rest, and milk diet.

. *Jan.* 10.—Professor Spence tied the superficial femoral artery in Scarpa's triangle, which produced immediate cessation of pulsation. The limb was kept slightly flexed, and enveloped in wadding. Convalescence progressed uninterruptedly, and the ligature separated on the tenth day after the operation. Patient dismissed cured, after having been two months in hospital; and the tumour was hard, painless, and not larger than half a walnut.

2.—W. G., æt. 45, carter, admitted July 4. One morning, about two weeks ago, patient noticed a swelling as large as a bean appear suddenly on the right side of his neck. Origin is supposed to have been a strain. For a few days after the accident, patient swallowed no food except fluids, and experienced great pain on the right side of his face and neck. The tumour has been gradually increasing, and now is as large as a hen's egg. The aneurism is situated at the bifurcation of the right common carotid artery. On examination, the innominate artery is found above the upper margin of the clavicle, dilated, its coats thickened. Pulse in right radial artery feebler than in left radial; and dilatation of aorta present. Patient's appearance markedly arthritic, and the arteries of the body generally have firm, resistant walls. Ordered rest, farinaceous diet, and the local application of ice.

22*d July.*—Tumour increased in size; and as patient complained greatly of shooting pains on the right side of head and face, and of a burning sensation in the interior of the mouth, it was proposed to ligature the right common carotid artery. Pulse 48.

25*th.*—To-day Professor Spence tied the common carotid artery. The usual incision was made, and the artery was observed lying deep in the wound. A greatly enlarged lymphatic gland, which lay over the course of the artery, was drawn aside with a hook. Pulsation ceased immediately after the ligature was tightened, and returned slightly after some hours. Patient laid in bed with his head inclined to the right side, and ice applied over the aneurism. *Vespere.*—P. 60.

26th.—P. 54. Feels pretty well, but coughs occasionally.

27th.—Has pain on the right side of chest, and a very troublesome cough. Professor Spence removed 10 oz. of blood by venesection, which gave great relief. Ordered small and frequent doses of tr. aconiti and linctus opii at bedtime to relieve the cough.

28th.—Slept well. Pain absent, and cough less severe. P. 64.

30th.—P. 59. Tumour smaller and pulsation very slight. Pulmonary symptoms improved.

August 4th.—P. 72. Wound looking well, but cough rather more troublesome.

9th.—P. 64. Cough better. Wound nearly closed. Appetite good.

12th.—P. 92. During the night, after a fit of coughing, blood was observed issuing from the wound, but, by the use of cold, hæmorrhage was stopped. He slept pretty well; and oozing occurred this morning, but was arrested by pressure. *Vesp.*—Slept a good deal during the day. Pulsation very slight in the aneurism, but marked in the proximal portion of the artery. P. 100. Is somewhat delirious, and moans; but says he has no pain.

At midnight, secondary hæmorrhage set in. P. 126. Dr Watson, in the absence of Professor Spence, was sent for; and on his arrival, pulse was 116, and venous blood trickled from the wound. Dr Watson proceeded to ascertain the source of the hæmorrhage by inserting his finger into the wound; but, owing to the consolidation of the textures, this was unsuccessful. Next, enlarging the wound, and dividing the sterno-mastoid, Dr Watson endeavoured to seize the bleeding orifice, but this also was found impossible. In consequence of the size of the innominate artery, and its concealment by the clavicle, a ligature could not be passed round it. Dr Watson accordingly compressed the innominate by means of a pair of dressing forceps, while he ligatured the gaping orifices of the carotid artery; but the patient never rallied. After death the vessels of the body generally were found atheromatous. Aorta and innominate artery greatly enlarged. The right common carotid artery had dense atheromatous walls, and was three-quarters of an inch in diameter. Old adhesions found between the pleuræ on the right side. Both lungs somewhat œdematous, and condensation present at base of right lung.

Remarks.—The two cases of aneurism just detailed contrast well with each other. In the first case, that of W. W., we have a comparatively young man affected with a disease which cannot be said to be common to his period of life, inasmuch as the morbid conditions of the vessels necessary for the development of aneurisms are not usually present. The tumour had begun spontaneously, had increased slowly, and had given rise to no inconvenience beyond the anxiety naturally connected with its presence. The other arteries of the body were apparently perfectly healthy; and as he was a man accustomed from his occupation to make violent and sudden exertions, the presumption was strong that no disease affecting the arterial system generally existed, but that, from some severe exciting cause, injury or local disease following irritation at one particular part had taken place. The prognosis, then, was most favourable,—that a permanent cure would be effected by the ligature of the vessel at a healthy part. In the case of W. G., the circumstances were very different. The prognosis in regard to the age of the patient was what might be termed unfavourable, as the disease occurred at a time of life when, in all probability, morbid changes had taken place in other parts of the arterial system, and on investigation this proved to be the case. The innominate artery was found so much dilated that it reached above the clavicle, and so extensively were its coats diseased that distinct thickening of them was perceptible; the aorta had suffered a similar change; the pulsation at the wrists differed; and even in the radial the peculiar firmness of the arterial coat was marked, indicating a general atheroma. Independent of all these only too plain evidences of the general affection, the history of the tumour was suspicious. It came on *suddenly*, and though supposed to have followed a strain, by no means certainly did so. In the circumstances, grave doubts were entertained as to whether the operation should be undertaken or not; but as the patient complained much of pain in the right side of the neck and face, which increased with the development of the tumour, from its threatening to point internally, the ligature was applied as affording the only means of escape from an otherwise painful and certain death. At the time of the operation, when the vessel was found so enormously dilated, and its coats so extensively diseased, a by no means favourable prognosis was formed,—a prognosis which, as the case terminated, proved only too true.

The femoral aneurism is a form not commonly met with. According to Dr Crisp, "of 551 cases of aneurism, 157 affected the popliteal, and only 66 the femoral artery; and of these 66, only 21 were truly femoral or femoro-popliteal." This may be accounted for by the exposed position of the artery in Scarpa's triangle and in the popliteal space, allowing for expansion at these points; while, in the intermediate part, the vessel is surrounded by muscle. The most frequently employed modes of treating such cases are compression, and ligature of the superficial femoral or external iliac arteries. The former of these methods is uncertain and tedious, while the latter is attended with more success than is the ligature of any of the other large arterial trunks. In the case of W. W., not a single bad symptom followed the operation, and a very small amount of suppuration served to cause separation of the ligature. On being dismissed from hospital, the tumour was less than half its original size, firm, and painless. Patient walked about without experiencing any inconvenience; and when heard of, about six months later, he was able to work as of old, and the tumour continued to diminish.

Aneurism of the common carotid artery is of rarer occurrence than the preceding variety. In the case of W. G. it was attended by a serious complication—dilatation of the arteria innominata. Constitutional treatment with the view of inducing a spontaneous cure was, accordingly, resorted to, till the increasing severity of the symptoms, threatening to be followed by serious, probably fatal results, rendered the operation imperative.

The only disturbance of the circulatory system produced by the operation was pulmonary congestion. According to Norris' table of 149 cases in which the carotid artery was ligatured, cerebral derangement was the cause of death in 18 of the 32 fatal cases; but in the patient, W. G., it was absent, probably because the right subclavian artery—which is known in such cases to be the chief source of the cerebral supply—was somewhat dilated at its first part. Pulmonary congestion, which often follows the ligature of the common carotids, is (according to Professor Erichsen) a secondary consequence of a derangement in the functions of the brain and of the medulla oblongata, primarily induced by the disturbed state of the circulation through that organ. Hence pulmonary congestion, in such cases, is owing to embarrassed respiration sequent on depression of the nervous centres. Such an explanation would hold good in cases where symptoms of nervous derangement preceded the pulmonary affection, but in the case of W. G. there were no indications of any marked interference with the normal cerebral circulation. This condition, however, might result from sudden interruption of the normal circulatory circuit, by constriction of one of its large channels inducing venous congestion and retardation of the process of oxygenation. Of the benefit of venesection in pulmonary congestion after ligature of the carotid arteries the above case is a striking example. Immediately after the blood had been removed, respiration became easy, and the patient felt greatly improved; nor did the pulmonary symptoms again become troublesome.

Death resulted from secondary hæmorrhage following the separation of the ligature. Up to this time—eighteenth day after the operation—convalescence had progressed favourably, and no pulsation existed along the ligature. After the innominate artery was controlled by dressing forceps, the hæmorrhage was discovered to be proceeding from the *proximal* end of the vessel. Owing to the depth of the vessel, and the suppurative changes in the wound, the source of the hæmorrhage could not be ascertained by simple examination with the finger; nor could the gaping orifices be laid hold of with forceps, owing to their large size and the matting together of the tissues. The abnormal size and displacement of the innominate artery, moreover, rendered it impossible to isolate it so as to pass an aneurism needle round it.

The autopsy further showed that the aim of the operation was so far attained, seeing that the aneurism was found semi-solidified.

AMPUTATIONS.

PRIMARY AMPUTATIONS.

Shoulder-joint.

1. T. E., æt. 26. Compound comminuted fracture of right humerus, with severe laceration of hand, caused by a loaded railway-truck. Lost a large amount of blood on the way to the hospital. Amputation by a large external flap. The axillary artery was ligatured before being divided, and little blood was lost during the operation. Patient died from exhaustion on the eighth day after admission.

Arm.

2. Mrs R., æt. 71. Compound, comminuted fracture of lower end of right humerus, with dislocation backwards of elbow, and compound comminuted fracture of radius; caused by falling downstairs with a jug in her hand. Amputation by equal flaps. Owing to the age and emaciated condition of patient, prognosis unfavourable. Died from exhaustion on the sixth day after operation.

3. T. A., æt. 25. Both hands and lower part of forearms blown off by the explosion of gun-cotton in a quarry. Though patient was very weak and only partially conscious, Professor Spence amputated both arms as being patient's only chance. Patient lived for one hour after the operation.

Forearm.

4. J. I., æt. 13. Severe laceration of hand, and compound comminuted fracture into right wrist joint, caused by machinery. Amputation by equal flaps. Recovered.

5. J. W., æt. 20. Right hand crushed between rollers. Amputation by equal flaps through the wrist. A considerable portion of the flaps, however, sloughed, and secondary amputation higher up was performed. Recovered.

6. J. G., æt. 40. Right hand and lower part of forearm severely crushed between toothed rollers. Amputation by equal flaps. Patient weak—emaciated. Progressed favourably for six weeks, but always required an opiate at bedtime. Died suddenly.

Leg.

7. J. M., æt. 38. Compound comminuted fracture of right leg

into ankle, caused by a railway waggon. Amputation below the knee by long posterior flap. Reactionary hæmorrhage occurred. On the fifth day after the operation delirium set in, and was followed by pyæmia. Death occurred on the eleventh day after the operation. No examination of the body granted.

SECONDARY AMPUTATIONS FOR INJURIES.

Forearm.

8. J. W., æt. 20, Injury of right hand by machinery. Amputation first through wrist; but in consequence of flaps sloughing, amputation by equal flaps at centre of forearm performed. Recovered.

Leg.

9. J. L., æt. 36. Compound fracture of right leg caused by the fall of a beam. Limb adjusted in a M'Intyre splint, but an oblique fragment of tibia about an inch long tended to project through the wound. Patient's health began to suffer, and after a month's endeavour to save the limb, amputation below the knee by a long posterior flap was performed. Pyæmia. Death.

AMPUTATIONS FOR DISEASE.

Shoulder-joint.

10. B. D., æt. 15. Medullary tumour of right arm. Pyæmia. Secondary hæmorrhage. Death.

Forearm.

11. A. A., æt. 64. Epithelial cancer of right hand and forearm. Death.

12. A. M'V., æt. 44. Disease of wrist, following a blow received twelve months previously. On examination, the whole of the carpus and most of the metacarpus were diseased. Had also incipient phthisis. Prognosis unfavourable. Pyæmia. Death on the eleventh day after operation.

Hip-joint.

13. M. W., æt. 5. Osteo-carcinoma of right femur. Recovered. For details, see Edin. Med. Jour., Nov. 1865.

Thigh.

14. A. P., æt. 8. Scrofulous disease of knee, of six months' duration. Amputation by long anterior flap at lower third of thigh. Constitution markedly scrofulous. Recovered.

15. R. H., æt. 17. Danish sailor. Admitted with acute necrosis of femur and diseased knee-joint, caused by a fall received six months previously. Ordered rest, and soothing local applications. On the fifth day after admission, suspecting perforation of the popliteal

vein, Mr Spence made an exploratory incision on outer aspect of the joint, and finding clots and fluid blood in the popliteal space, amputated at lower third of thigh by long anterior flap. Pyæmia. Death on the twenty-first day after operation.

16. T. A., æt. 50. Acute necrosis of femur, and suppuration in knee-joint, of nine weeks' duration. On admission, pulse 105, and patient suffering from irritative fever. A week later, when the acute symptoms had abated, amputation by long anterior flap was performed. Pyæmia. Death.

17. A. T., æt. 3½. Scrofulous disease of knee, of two years' standing. Appearance markedly scrofulous. Femur necrosed for an extent of three inches. Amputation by long anterior flap. Recovery.

18. B. J., æt. 9. Scrofulous disease of the knee. Appearance emaciated; amputation at lower third of thigh by Mr Teale's method. Recovery.

Ankle.

19. A. D., æt. 20. Scrofulous disease of ankle, of four years' standing. Ordinary amputation. Recovery.

20. D. S., æt. 15. Scrofulous disease of ankle, with caries of articular surfaces, of three years' duration. Ordinary amputation. Recovery.

21. A. M., æt. 17. Caries of tarsus, of five months' duration, and consequent on injury. Ordinary amputation. Recovery.

22. C. M., æt. 14. Extensive disease of tarsus, of six months' standing. Ordinary amputation. Pyæmia. Death.

23. R. T., æt. 30. Caries and synovial disease of tarsus, of two years' duration. Two large ulcers present on outer aspect of joint. Amputation by a long internal flap. Pyæmia. Death.

24. W. C., æt. 7. Scrofulous disease of ankle, with abscess in the tibia. Amputation by long internal flap. Recovery.

Remarks.—The cases of amputation were in all 24; viz., 2 at the shoulder-joint, 2 of the arm, 6 of the forearm, 1 at the hip-joint, 5 of the thigh, 2 below the knee, and 6 at the ankle. Of these, 7 were primary amputations, 2 were secondary amputations in cases of injury, and 15 were amputations for disease.

Primary amputations are performed as a rule under more unfavourable circumstances than those attendant on amputations for disease. Though in the latter instance the morbid changes have been of longer duration, yet in cases of primary amputation, shock, exposure to cold, fatigue, and extensive damage suddenly inflicted on previously healthy living textures cause a depression of vital action not readily overcome. In cases of amputation for disease, relief is afforded by removing the cause which maintains the constitutional disturbance; but amputations for injury are performed before the vital equilibrium which has been overturned by the injury is restored, and a tedious convalesence from amputation is incurred ere the effects of the accident have passed off. The cases of primary amputation requiring notice are those which proved fatal and which exemplify the above remarks. In the case of T. E. (1.), the injuries were caused by a loaded railway waggon passing over the limb; they were received about six hours prior to admission; patient lay on the cold ground for two hours in one of the severest nights of winter ere he was discovered, and during the journey he was exposed to cold and jostling while being brought from Fife. When admitted into hospital he was weak from loss of blood. He had received compound comminuted fracture of the humerus, with extensive bruising of the soft tissues, and the brachial artery was wounded at a point corresponding to the fracture. The hand and lower part of the forearm were lacerated and cold. Patient progressed favourably for a few days after the operation, but never recovered from the shock of the accident and fatigue of the journey.

The patient, T. A. (3.), was brought from a considerable distance in a cart with both his hands lying detached beside him. On admission he seemed to be rather dead than alive. By the use of stimulants and external warmth he gradually improved, and Mr Spence amputated both arms. Patient had also a lacerated wound of the scrotum, exposing the testes, and the front of the chest was scorched. After being washed, the testicles were replaced and the wound stitched. Having scarcely recovered from the shock caused by the injury, patient died about an hour after the operation.

The circumstances attendant on the death of J. G. (6.), point to previous habits as the cause of the fatal issue. Amputation of the forearm was performed for injuries of the hand received while working in a cotton factory. Patient did well for six weeks after the operation, and then suddenly became ill and died. On inquiring into her history, it was found that of late years she had lived a very intemperate and irregular life, and had suffered from six attacks of delirium tremens. She was also emaciated and weak from starvation. When patient died on the forty-seventh day after the operation, the stump was entirely cicatrized except at its outer angle.

Of the secondary amputations for injury, one terminated fatally, and one recovered. Pyæmia, which most frequently supervenes in such cases, occurred in the former case. Thus confirming the results of experience, that in large hospitals,—especially those chiefly surgical, and situated in the centre of crowded cities,—less risk attends primary than secondary amputations for injury.

Of the fifteen amputations for disease, seven died. This mortality is much above the average, but the cases operated on were of a proportionably serious class. The patient, A. M'V. (12.), was much weakened by the discharge from the joint, which had existed for nine weeks; and this, along with condensation of the apex of right lung, made the prognosis after amputation most unfavourable.

Patient had no power in the hand, and the wrist was swollen and painful. Delay was rendered impossible in consequence of the extent of the disease requiring opiates at night, and gradually but steadily reducing the patient's strength.

In contrast to the above cases stands the successful case of amputation at the hip-joint. This is Professor Spence's fifth case of amputation at the hip; and of these, three have been successful. Of the successful cases, one was a primary amputation for injury, and the other two were amputations for disease. The details of M. W's case have been published already and require no repetition.

Two of the five cases of amputation of the thigh were performed for acute disease, and both these patients died of pyæmia. The patient, R. H. (15), though a lad, was very weak and emaciated on admission. The disease had caused very rapid disorganization of the tissues of the joint, and patient was exhausted from want of sleep. The patient's only chance of recovery consisted in amputation, and after the limb was removed, besides caries of the articular surfaces and suppurative destruction of the soft tissues of the joint, an ulcerated opening into the popliteal vein was discovered. The improvement in health which followed the operation was very striking, and continued for a fortnight, when he had rigors, followed by pyæmia and death. In the case of the other patient, T. A. (16), amputation was performed under still more unfavourable circumstances, for the patient was advanced in years, the progress of the disease was rapid, and its extent great. Amputation was delayed for a week, and soothing local applications employed till the acute symptoms passed off, but at this time no improvement in health occurred, and removal of the limb was the only hope. On dissection the cartilages of the knee were found to be pulpy, and large portions of the articular surfaces of the femur, tibia, and patella, were carious. Various abscesses existed at the lower part of the thigh, and the joint was filled with a sero-purulent fluid. During the operation patient's arterial blood was observed to be dark-coloured. He did well for a week after the operation, and then had rigors, followed by pyæmia and death on the fifteenth day after the operation. The examination after death revealed secondary abscesses in both lungs, and at the upper part of the amputated thigh in the neighbourhood of the blood-vessels. Femoral vein thickened, and having the usual phlebitic characters for about four inches from its lower extremity.

In referring to the amputations of the thigh, another fact deserves notice. The patients A. T. and B. J. were in the hospital at the same time; and while the flap in the latter case was made according to Mr Teale's method, in the former instance Mr Spence's modification was employed. Both patients had admirable stumps, and the only difference noticeable was that the rectangular flap was with more difficulty retained in proper position than was Mr Spence's modified long anterior flap.

Amputations at the ankle-joint are the most successful of all the amputations, and hence the two fatal cases above recorded demand attention. The patient, C. M. (22), was a very nervous lad, whose foot was amputated for extensive disease of the tarsus. On dissecting the foot the whole of the soft tisues of the joint were found to have undergone gelatinous degeneration, the tarsal bones were all more or less carious, the os scaphoides was atrophied, and the articular surfaces were partially carious. Patient improved greatly in health till the seventh day after the operation, when secondary hæmorrhage occurred, and was followed by pyæmia, delirium, and death. The other patient, R. T., suffered also from very extensive disease of the ankle, complicated with a very depraved state of health. He did well for three weeks after the amputation, when he had rigors, superficial abscesses formed in various parts of the body and were opened, and he died.

Conservative surgery as applicable to diseases of the joints has been strongly advocated of late years by some surgeons. One of the strongest and ablest maintainers of this view, Mr Solly, in his lately published work entitled "Surgical Experiences," says, "I believe it is only the *second* time I have amputated a limb for disease of the knee-joint since I have been an officer of this hospital," viz., during thirteen years. "In every other instance," he continues, "I have been able to procure anchylosis, though in one it required three years to accomplish it." On the other hand, Mr Spence, during the session 1864–65, amputated *twelve* limbs for diseases of the joints, and of these five were for disease of the knee-joint. Laying aside the two cases of amputation for acute, and, as shown above, very extensive disease of the knee-joint, the three instances of chronic scrofulous disease deserve comment. All three patients were children, sickly and emaciated. The leg in each case was atrophied, and the knee flexed. Besides synovial degeneration and ulceration of the articular cartilages, the osseous elements were more or less affected. To have straightened the limb under chloroform, and maintained it in the extended position, would have probably excited acute local mischief, which would in due time have implicated the system and made amputation too late. On the other hand, besides the pain, exhaustion from discharge, and the constitutional disturbance, the risk attendant on a tedious ("three years'") convalescence counterbalances greatly the advantages to the lower working classes of an entire but flexed and immobile limb. The extent of the disease in several cases of the above series has been fully detailed in order to show in what classes of patients the amputations were performed; and it would indeed be a very valuable service, if the advocates of conservative surgery described the exact extent of the disease, and the constitutional condition of their successful cases. Conservative treatment, moreover, is as a rule inapplicable in cases of diseased tarsus; for caries of the tarsal bones, though often gouged, is apt to return, and hence amputation is preferable.

TRACHEOTOMY.

1. C. P., æt. 3. Croup. Tracheotomy. Death on second day from bronchitis.
2. J. H., æt. 2. Diphtheria. Tracheotomy. Death on fourth day.
3. C. M., æt. 2. Croup. Tracheotomy. Death on following day.
4. J. W., æt. 2. Croup. Recovered without an operation.
5. J. J., æt. 4 months. Acute effusion into larynx. Tracheotomy. Death.
6. J. R., æt. 3 years. Croup. Tracheotomy. Death on second day.
7. R. H., æt. 1. Croup. Tracheotomy. Death on second day.
8. C. S., æt. 6. Diphtheria. Tracheotomy. Recovery.
9. A. H., æt. 12. Chronic laryngitis. Tracheotomy. Recovery.

Remarks.—Taking a hurried glance over the above series of cases, one is led to conclude that tracheotomy, especially in cases of croup, is attended by very fatal results. The patients above mentioned were children of weakly constitution, and who had been ill-fed and ill-clothed. This consideration, as also the fact of these patients being brought to the hospital when almost *in articulo mortis*, should not be overlooked in judging of the advantages and disadvantages of the operation. In all the cases except the first—C. P.—death resulted from exhaustion caused by the disease, and aggravated by the previous condition of the patient. The case of J. W. (4.) is interesting as being one not commonly met with in the hospitals of our large cities. Patient took ill five days before admission, and the disease was declared two days later to be croup. When brought into hospital, pulse was rapid and weak, respiration frequent and laboured, but there was no lividity, no extreme contraction of the thoracic muscles, nor any symptom indicative of impending asphyxia. Patient was accordingly placed in a warm bath and poultices were applied over the throat. By these means, with the occasional exhibition of an emetic to facilitate expectoration, and plenty of food, patient gradually improved, and was dismissed cured on the eighth day after admission. The patient J. J. was operated on by Professor Spence for double harelip, and a week thereafter (when the lip was completely healed) she had rigors, followed by hoarseness and symptoms of simple catarrh; but no pulmonary affection was detectable. The use of warm applications to the throat, and attention to the general health, caused an improvement which lasted four days, when patient suddenly became livid, and asphyxia seemed impending. Palliative measures were futile, and tracheotomy was therefore performed. This operation gave immediate relief, and patient did well for thirty hours thereafter, and then gradually sank. On examining the larynx, it was found to be the seat of solid submucous effusion approximating the vocal cords, so that they almost met each other in the mesial line. The laryngeal affection was owing to exposure to cold, and to inattention on the part of the mother in keeping the patient warm and dry. When, then, such an affection attacked a child who was recovering from an operation, and who at the same time was weak and young, it is little wonder that death was the result. The operation, however, achieved (as in all similar cases) the great end of warding off impending asphyxia, and affording an easy death. The case of C. S. (8.) illustrates the benefit of not delaying the operation too long. The disease commenced a week previously. The symptoms were urgent at the time of the operation (four hours after admission), but the patient was not exhausted by the effects of impeded respiration. During the three days following the operation, she was nourished by enemata, because deglutition was painful. This method allowed a large amount of nourishment to be poured into the system without irritating the parts affected. Patient's convalesence was uninterrupted, and she was dismissed *cured* a fortnight after adadmission. At this time the wound was almost healed up, and she had been able for some days previously to breathe easily without the tube.

HERNIA.

1. D. J., æt. 29. Reducible inguinal hernia, complicated with omental protrusion.

2. T. O., æt. 48. Reducible inguinal hernia, complicated with omental protrusion.

3. J. B., æt. 46. Oblique inguinal hernia, reduced after the use of ice for some days.

4. W. M., æt. 60. Double inguinal hernia, easily reduced.

5. B. S., æt. 70. Femoral hernia, strangulated for forty-eight hours. Operation. Sac opened. Death from peritonitis.

6. H. B., æt. 19. Congenital hernia, strangulated for twenty hours. Operation. Sac opened. Recovered.

7. T. G., æt. 75. Oblique inguinal hernia, strangulated for four days. Stricture extremely tight, and surface of bowel granular, with ecchymosis between its coats. Sac opened. Death from peritonitis five days later.

8. A. A., æt. 37. Femoral hernia, strangulated three days. Operation. Sac opened; and bowel, being gangrenous, was stitched to the external wound. Four months pregnant. Death, after abortion, on fifth day after operation.

9. Mrs G., æt. 48. Femoral hernia, strangulated for six hours. Extra-peritoneal operation. Recovered.

10. A. J., æt. 73. Femoral hernia, strangulated for thirty-six hours. Operation. Sac opened; peritoneal surface of intestines inflamed and granular. Death from peritonitis seven days after operation.

Remarks.—The above cases are instructive as examples of the forms of hernia most frequently met with. In the cases both of the patient D. J., who had suffered from hernia for three years, and of T. O., who had suffered from it for twenty years, the portion of bowel protruded was easily reduced; but, in the former case, a portion of omentum as large as a walnut, and, in the latter case, several smaller omental masses remained behind, and defied reduction. This condition was owing probably to an excessive deposit of fat, as well as to constriction of the external abdominal ring. Both patients were very corpulent; and in both instances the treatment by rest, sparing diet, and the local application of ice, proved effectual in diminishing the omental masses, and so procuring their reduction. These cases are further instructive in showing the care necessary in reducing herniæ, lest any portion of omentum be allowed to remain unreturned. In these cases of omental hernia, the probability was that more of the omentum had protruded than was usually the case; that a certain amount of constriction was produced, and venous congestion the result. Such conditions are, of course, only premonitory of true strangulation; hence the risk in allowing herniæ consisting only of omentum to be kept unreduced —the necessity for the treatment adopted to procure reduction.

The operation for strangulated congenital hernia is frequently unsuccessful; the case of H. B., then, deserves notice. That this variety of hernia should be so often fatal is no doubt accounted for by the anatomical condition of the parts. A comparatively short and wide canal becomes, as age advances, elongated, condensed, and oblique. When, accordingly, during youth or adult age, an intestinal protrusion descends along this channel, its return is opposed by a dense, unyielding barrier; and in consequence of congestion or distention, becomes rapidly strangulated and gangrenous. The rule, then, taught by experience in all cases of hernia, and especially in this variety, and strongly inculcated by Professor Spence, is to operate *early;* for taxis is often more likely to produce local mischief than to reduce the hernia.

The patient A. A. progressed favourably for five days after the operation: although the bowel when operated on was too diseased to allow of its being returned into the abdomen. In like cases, Mr Spence, after freely dividing the stricture, fixes the bowel to the edges of the wound by a single stitch, and allows it to remain thus for three or four hours before he opens it. This plan he pursues in order to prevent the chance of any of the feculent fluid passing into the abdomen after the bowel has been opened; for, during this interval, plastic matter is thrown out, and adhesions are formed between the bowel and parietes, effectually obstructing the passage of fluid backwards. In the case of A. A. all promised well, and patient was cheerful, and felt relieved by the operation; till abortion occurred, and death succeeded in a few hours. In the three cases in which death resulted from peritonitis, the inflammation had preceded the operation, as shown by the state of the intestine and peritoneal effusion at the time of the operation; indeed, the state of the parts led to great doubt as to the accuracy of the duration of the incarceration prior to admission into hospital.

The general treatment of hernia is well illustrated by the above cases. When the surgeon has satisfied himself of the correctness of his diagnosis, his first care is to attempt reduction of the hernia by taxis. If this prove unsuccessful, and the hernia becomes irreducible, he endeavours, by the use of a warm bath, by the exhibition of large enemata containing castor-oil, turpentine, and warm water, and by the local application of cold, to empty the bowel of its feculent and gaseous contents, to cause relaxation of the constricting tissues, and to diminish local congestion. If these means fail, the patient should be placed thoroughly under the influence of chloroform, and the taxis again attempted. Should all these measures prove unsuccessful, the case becomes one of strangulated hernia, and operative interference is necessary. Thus, it will be observed, that no means tending to debilitate the system are used, seeing that the same end —relaxation of the muscles—is better, and with less danger, attained by the exhibition of chloroform.

Case of Ununited Fracture of Humerus.

T. M'G., æt. 26. Admitted Aug. 4. Six months ago, patient sustained simple fracture of the humerus near its centre. The limb was for six weeks supported by splints, and by a stiff bandage during the following four weeks. Finding that the mobility of the arm at the fractured point prevented him working, he again consulted a medical man, who applied splints during ten or eleven weeks longer. About six weeks prior to admission, he consulted Mr Spence, who ordered the limb to be kept at rest by rectangular splints and a starched bandage. This proving ineffectual, patient was admitted into hospital, and an operation recommended.

August 18. Professor Spence made an incision on the outer aspect of the arm over the site of the ununited fracture. By means of bone-pliers, the uniting medium and extremities of the fragments were removed; and the limb was adjusted in a plaster-of-paris bandage, with Gooch's splints to support the seat of fracture.

Convalescence progressed without interruption, and though attended by a considerable amount of suppuration, the result was very satisfactory. Patient, on leaving hospital, had a firm and useful arm.

Remarks.—Various methods have been employed to rectify the inconvenience caused by ununited fractures. Their object is to excite an amount of healthy inflammatory action sufficient for consolidation; and of these modes the chief are the introduction of acupuncture needles, the subcutaneous division of the uniting medium, the use of a seton, and Dieffenbach's proposal of inserting ivory pegs into the ends of the fractured bone. Such means are often successful in recent cases, when accompanied by proper constitutional treatment. But cases of long standing generally require the severer procedure of removing the false joint. Tonics and nutriment often cure such cases when the affection is due to debility or disease, causing absorption of callus or tending to prevent its deposition. No such condition was present in the patient, T.

M'G., and considering the distance between the fragments, resection of the false joint was alone likely to be of advantage. This operation, as generally performed, is not, as a rule, followed by very favourable results; but in this case Professor Spence adopted the modification of the usual method which he introduced in 1854, the principle and details of which will be found in the volume of this Journal for 1855–56, pp. 433–35. With an ununited fracture, moreover, the patient has a useless limb, while after resection, though shortened, the member may be firm and useful; and, should the operation not succeed, the patient is placed in no worse condition than before.

Case of Rhinoplastic Operation.

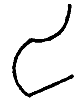
J. C., æt. 19. Admitted August 9. When patient was ten years old, a small ulcer was observed on the right side of the septum nasi. The disease perforated the septum, and afterwards attacked the alæ, not ceasing from its ravages till the cartilages and neighbouring soft parts were all eroded. On admission the nose possessed neither alæ nor septum; but the disease was arrested, and the margins of the nostrils were cicatrized.

23*d*.—To-day, Professor Spence removed skin and soft tissue from either cheek to form a new nose. The flaps were irregularly triangular with broad apices, and were dissected off except at their apices. They were stitched together in the mesial line, a plug was inserted into the nostrils to support the nose, and pins were placed vertically at the corners of the alæ to prevent their flattening.

After recovery the cicatrices on the cheeks were not much observed. The greatest difficulty in treating the case consisted in supporting the nose against the retraction of the cicatrizing cheeks, and at the same time not stuffing the nostril so as to break up the mesial cicatrix.

September 30.—Patient progressing favourably.

Remarks.—The operation described in surgical works, and most commonly performed for the restoration of the nose, is termed the Indian operation, and consists of a triangular flap dissected from the forehead. In the case of J. C. a different method was pursued. Two flaps were made, each shaped as on the margin, and composed of skin and soft tissue derived from either cheek. As stated above, the result was highly satisfactory. After the patient recovered from this operation, Professor Spence made a columna from the upper lip. The advantages of this method over the Taliacotian and Indian operations are the following:—The flaps have a better vascular supply, the cicatrices are much less noticeable than was the frontal cicatrix, and the columna derived from the upper lip improves this part, which in such cases is hypertrophied.



(*To be continued.*)

ARTICLE III.—*Notes on the Prison Dietaries in Scotland.* By J. B. THOMSON, L.R.C.S.E., Resident Surgeon to the General Prison for Scotland. PART III.

IN the May and July numbers of the Medical Journal, I offered my notes on the Prison Dietaries of Scotland, which gave the following results, viz. :—

That these dietaries were insufficient during the decennial period 1844–1853, being accompanied by a failure of health, general debility, diarrhœa, dysentery, scrofula, and scurvy among large numbers of prisoners;

That the improved dietaries for the decennial period 1854–1863 maintained well the general health, showed none of the prison diseases above-named, and were followed by a reduced ratio of sickness and death, and an increased return of work from the prison population;

That our Scottish dietaries contrast favourably with those of English prisons; the lowest rates in the borough and county prisons of England affording amounts of nutrition proved to be inadequate to maintain a good physical condition; our use freely of oatmeal and milk is less expensive than the article of meat which appears in all the English dietaries; and, further, a greater amount of real nutrition is obtained by the Scottish food, at a much lower price, than by the English prison dietaries.

Here, perhaps, we ought to say a word or two in defence of our national dietary of oatmeal and milk, which the English have been accustomed to abuse long before the famous aspersions cast upon it by the great lexicographer, whose definition of oats is so well known. In a return to an address of the Honourable the House of Commons, dated 20th May 1864, for "Copies of Correspondence between the Secretary of State for the Home Department and the Inspectors of Prisons, relating to the Report of the Select Committee of the House of Lords on Prison Discipline, and of the Report of a Committee appointed by the Secretary of State to inquire into the Dietaries of County and Borough Prisons," page 55, we have our milk and oatmeal spoken of contemptuously and disparagingly as "a combination of milk and meal similar to that which is successfully employed in England to fatten pigs." The foregoing statements betray a painful ignorance of the value of milk and meal, which have been long ago shown by practical observation and scientific analysis to be articles of first-rate alimentary importance. Milk, which contains largely the nutriment of animal food, supplies the place of meat; and is the substratum of the national diet of the Irish and the Scottish nation, whose agricultural labourers in fields of war or peace are fit for the utmost endurance. Oatmeal 17½ lbs., and new milk 7 pints weekly, make the common fare of Scotch ploughmen, and the nutriment in these articles is greater than is allowed to the best fed of the same class in the other divisions of the three kingdoms; and yet this is the food declared to be suitable only to *fatten pigs*. The physical power and industrial vigour of our countrymen depend upon it; and the full-grown agricultural Scot has been proved by the dynamometer to be in average strength one-twentieth part more vigorous than the beef-eating Englishman. Our experiments on prisoners also prove these national articles of diet to be cheaper and as nutritious fully as those in English use. Surely the inexorable logic of facts, and the proofs from science and observation, will at length remove the prejudice long and deeply cherished against Scotland's national dietary of milk and oatmeal.

The inquiry into the prison scales of diet has led Professor Christison and myself to consider whether the articles in use give sufficient variety, and we are satisfied that the dietaries are by no means monotonous, and no new articles of food in our opinion require to be added.

Another question came before us as having engaged a good deal the attention of the Committee on English Dietaries, viz., whether a low rate of diet might not be advantageously introduced during the early stages of convict imprisonment, the scale gradually ascending after a length of time. The objections to this seem to me very strong. We know that at first the prisoner generally falls off in prison; he suffers much before trial and for some months after from depression of mind and previous dissipation, so that a high rate is required to keep him up; and if he fails in his health, he cannot do his hard-labour task; and, besides the direct loss from inefficiency for work, it is expensive and difficult to restore him again to vigour and usefulness.

These results of our inquiries seem to have pretty well exhausted the subject, and we come to the settlement of the question,—What changes, if any, can be safely made in our scale of prison dietaries? Professor Christison concurred in thinking that very few changes could be made, and these should be entered upon with great caution, seeing that, on the whole, our preliminary results proved the dietaries of our local and general prisons to be in a very satisfactory state.

It only remains here to state the changes proposed in our dietaries.

I. *In Local and County Prisons.*—Heretofore, the practice had been to allow the same rates of diet for adult males, adult females, and juveniles under fourteen years of age. Now, it plainly appeared that the rates being found fully adequate for males, must be more than adequate for females and juveniles, as the returns proved. Here, then, was room for a proper reduction of the allowances to adult females and juveniles. We proposed—

That Rate I., which allows 70 oz. oatmeal weekly, be reduced to 56 oz., and this reduction be Rate I. for adult females and juveniles under fourteen years of age. Experience has taught us that juveniles of that age require a diet equal to an adult female. Rate I. for adult males to be the Rate II. for females and juveniles; and the present Rate II. for males to be Rate III. for females and juveniles.

In local prisons there are a very large number of prisoners under sentences of fourteen days' imprisonment and less; and, after careful inquiry, it was agreed to reduce them to the same as females and juveniles.

II. *In the General Prison* the only reductions proposed were applicable to female convicts in the reformatory classes, viz., meat to be reduced from 38 to 26 oz. weekly, and cheese added to the extent of 4½ oz. weekly. Also, on certain days (when surplus food had been returned), porridge to be reduced from 8 oz. to 6 oz., and broth or soup from 2 pints to 1½ pint.

It is difficult to estimate the saving in local prisons by these reductions; but in the General Prison at Perth the change in the dietary of the female convicts would bring down the annual cost from £8, 13s. 4d. to £7, 4s. 5d. per prisoner,—giving an average of about £250 per annum.

To these proposed reductions a few recommendations were added, drawn from experiments and observations in different prisons. In some prisons the milk supply was found insufficient, and in all such cases a marked failure was observed in the general physical condition of the inmates; the larger proportion falling off in weight. It was therefore enjoined that, if milk is not to be got, treacle-water is an insufficient article as a substitute, and 4 oz. cheese must be given, or 6 oz. ox-head must be added to the soup or broth daily.

Potatoes were found not to be given in many small prisons, but bread instead, to save cooking. Looking, however, at the value of the potato as an anti-scorbutic, we insist upon potatoes being given in all prisons during the potato season, if they are of good quality.

In some local prisons, we observed that a general failure of health appeared where the means of airing and exercise were defective. We conclude that no dietary, however good, can support the health, even of short-sentenced prisoners, unless they have proper grounds for airing and exercise. This is especially the case in rural districts, where many of the prisoners have been accustomed to free air and out-door labour.

The Report on the Prison Dietaries in Scotland concludes thus:—"In conclusion, we have to add, that with the dietaries in present use our experience leads us to propose even these few changes not without reserve and very deliberate consideration. Knowing that prisoners have generally depraved constitutions, from hereditary causes and habitual vices; that they suffer also from mental depression and confinement, requiring a better dietary than persons of the same age and class engaged in similar occupations out of prison—we cannot give way to the pressure of public opinion upon this subject. If it be the case, as seems not impossible, that less nutriment is required for persons living at large in a similar condition as to confinement and exercise, we see at present no other way of accounting for all the facts than by supposing that the food of prisoners is not assimilated to the same extent in prison as it is in freedom. But, at all events, having had the experience that a bare subsistence dietary is, under certain circumstances, sure to endanger the general health of large numbers in prison, leading to increased sickness and mortality, and loss of work from illness, we have been warned against any bold reductions; and in reporting upon the best dietary table for prisoners, we are favourable to the opinion that a slight excess, rather than a bare minimum allowance, is not only more safe for keeping up the health of prisoners, but really a wiser economy for the country."

The following is the prison scale of dietaries as proposed above, and which is adopted and in present use in all the Scottish prisons:—

Rules for the Dietaries of the Prisons in Scotland, authorized by One of her Majesty's Principal Secretaries of State, in terms of Sect. 9 *of* "*the Prisons* (Scotland) *Administration Act*, 1860."

The term "Juveniles" is to apply to persons not exceeding fourteen years of age.

The following are the Tables of Dietaries for the several classes of prisoners:—

I. Persons under sentence to imprisonment not above three days.—

Breakfast...........	1 pint oatmeal gruel.
Dinner..............	1 lb. bread.
Supper..............	1 pint oatmeal gruel.

II. Persons under sentence to imprisonment above three days, and not above fourteen days.

Females and Juveniles under sentence to imprisonment above fourteen days, and not above two months, not with hard labour.

Females and Juveniles under sentence to imprisonment with hard labour not above ten days.

BREAKFAST.	DINNER.	SUPPER.
4 oz. of oatmeal made into porridge, with ¾ pint of milk.	1½ pint of barley broth, with 6 oz. of wheaten bread. or, 2½ lb. of potatoes, with ¾ pint of milk.	1½ lb. of potatoes, with ½ pint of milk; or, 4 oz. of oatmeal made into porridge, with ½ pint of milk.

III. Male Adults under sentence as follows:—

To imprisonment above fourteen days, and not above two months, not with hard labour.

To imprisonment with hard labour not above ten days.

Females and Juveniles untried, or under sentence as follows:—

To imprisonment above two months, and not above six months, not with hard labour.

To imprisonment with hard labour above ten days and not above sixty days.

BREAKFAST.	DINNER.	SUPPER.
6 oz. of oatmeal made into porridge, with ¾ pint of milk.	1½ pint of barley broth, with 6 oz. of wheaten bread; or, 2½ lb. of potatoes, with ¾ pint of milk.	1½ lb. of potatoes, with ½ pint of milk; or, 4 oz. of oatmeal made into porridge, with ½ pint of milk.

IV. Male Adults untried or under sentence as follows:—

To imprisonment above two months, and not above six months, not with hard labour.

To imprisonment with hard labour, above ten days and not above sixty days.

Females and Juveniles under sentence as follows:—

To imprisonment with hard labour, above sixty days.

To imprisonment above six months, with or not with hard labour.

To penal servitude during the first or probationary period of discipline.

BREAKFAST.	DINNER.	SUPPER.
8 oz. of oatmeal made into porridge, with ¾ pint of milk.	2 pints of barley broth, with 8 oz. of wheaten bread; or, 2½ lb. of potatoes, with ¾ pint of milk, and 4 oz. of wheaten bread.	1½ lb. of potatoes, with ½ pint of milk; or, 4 oz. of oatmeal made into porridge, with ½ pint of milk.

V. Adult Males, under sentence as follows:—

To imprisonment with hard labour above sixty days.

To imprisonment above six months, with or not with hard labour.

BREAKFAST.	DINNER.	SUPPER.
8 oz. of oatmeal made into porridge, with ¾ pint of milk.	2 pints of barley broth, with 12 oz. of wheaten bread.; or, 2½ lb. of potatoes, with ¾ pint of milk, and 8 oz. of wheaten bread.	2 lb. of potatoes, with ½ pint of milk; or, 6 oz. of oatmeal made into porridge, with ½ pint of milk.

VI. Females and Juveniles under sentence to transportation or to penal servitude, who have been advanced beyond the first or probationary class.

On Four Days of the Week.

BREAKFAST.	DINNER.	SUPPER.
8 oz. of bread, with ½ pint tea.	6 oz. of meat, with 1½ oz. of cheese; and either 6 oz. of wheaten bread, and 1 lb. of potatoes, or 12 oz. of wheaten bread.	The same as breakfast.

On Two Days of the Week.

6 oz. of oatmeal made into porridge, with ¾ pint of milk.	2 pints barley broth, with 8 oz. wheaten bread.	The same as breakfast.

On One Day of the Week.

The same as on two, except that the barley broth is to be 1½ pint instead of 2.

VII. Adult Males under sentence of penal servitude, and not employed at public works.

BREAKFAST.	DINNER.	SUPPER.
8 oz. of oatmeal made into porridge, with ⅜ pint of sweet milk; or, 12 oz. of wheaten bread, with ⅜ pint of sweet milk.	On two days of the week— 2 pints of barley broth or pease-soup, with 12 oz. of wheaten bread on the one, and 12 oz. of oat-cake on the other day; or, 2½ lb. of potatoes, with ¾ pint of milk, and 8 oz. of wheaten bread. On one day— 12 oz. of fish and 12 oz. of wheaten bread. On four days— 6 oz. of meat, and 1 pint of broth or soup, with 12 oz. of wheaten bread.	2 lb. of potatoes, with ⅜ pint of sweet milk; or, 6 oz. of oatmeal made into porridge, with ⅜ pint of sweet milk.

VIII. Prisoners under punishment for prison offences, for terms not exceeding three days,—

1 lb. of bread, with water, per diem.

Prisoners under punishment for prison offences, for terms exceeding three days,—

Breakfast,—1 pint of gruel; 8 oz. of bread. *Dinner*,—8 oz. of bread. *Supper*,—1 pint of gruel; 8 oz. of bread.

IX. The following directions relate to the foregoing dietaries, viz.:—

1. Two pints of barley-broth must contain—first, 4 oz. of barley, or 3 oz. of barley and 1 oz. of pease; second, 2 oz. of marrow-bones or ox-head, or 1 oz. of hough or neck, or 1 oz. of some other meat, or ¼ ounce of dripping or suet; and, third, a proper quantity of onions, leeks, carrots, turnips, cabbages, or other vegetables. The oatmeal gruel, when made in quantities exceeding 50 pints, to contain 1¼ oz. of oatmeal per pint, and 2 oz. per pint when made in less quantities. The gruel on alternate days to be sweetened with ¾ oz. of molasses or sugar, and seasoned with salt.

2. Half a pint of tea must contain ¼ oz. of tea, ½ oz. of sugar, and 1 oz. of milk.

3. An equal quantity of potato-soup, or pease-soup, or barley-milk, may (with the limitations hereafter specified) be substituted for the barley-broth. Two pints of potato soup must contain 1 lb. of potatoes (instead of 4 oz. of barley), with the same ingredients in other respects as two pints of barley-broth. Two pints of pease-soup must contain 4½ oz. of pease, the other ingredients being the same as in the barley-broth and potato-soup, except that the quantity of vegetables may be smaller by about one-half. Two pints of barley-milk must contain 4 oz. of barley (boiled in water till it is soft, and the water partly boiled away) with ¼ pint of good skimmed sweet milk and a little salt; the rest of the quantity being made up with water.

4. Fish and barley-broth may be substituted the one for the other, at the rate of 6 oz. of fish for one pint of broth.

5. Barley-bannocks, or bread made of wheat and oatmeal mixed, may be substituted for wheaten bread on one day of each week, and oat-cake on another day; the oat-cake to be of the same weight as the wheaten bread, but the barley-bannock must contain a weight of *meal* equal to the weight of wheaten-bread, making the bannock itself somewhat heavier. The wheaten-bread may be made of second flour or over-heads.

6. Potatoes, whether in their ordinary form or made into soup, must not be

given for dinner more than twice each week; but they may be given for supper as often as may be convenient, provided that they be not given on the days on which the prisoners have potatoes or potato-soup for dinner.

7. Either fresh skimmed-milk, or butter-milk, may be used.
8. Salt must be given with each meal.
9. Especial care must be taken to preserve the potatoes, so that they shall not vegetate or be injured in any way. No potatoes must be used unless they are quite sound; and it is recommended that, as a general rule, potatoes be not used from the end of April until the ensuing autumn. If, from any unforeseen emergency, milk should not be obtainable, there may be substituted for it a like quantity of treacle-water, at the rate of 1¼ oz. treacle to a pint of water; but when this substitute is used, there must be added to the dietary, in the proper table, 6 oz. of ox-heads in the broth or soup and 4 oz. of cheese.
10. A change of food being beneficial to health, it is directed that the dinner, on at least two days in the week, shall be different from the dinner on the other days.
11. In weighing or measuring the food, the imperial weights and measures must always be used.
12. Potatoes and other vegetables must be weighed after they are washed, but before they are cooked. Meat must also be weighed before being cooked.
13. The hours of meal throughout the year shall be as follows:—Breakfast at ½-past 7 in the morning, dinner at 1 in the afternoon, and supper at 7 in the evening.
14. In the evening work should cease a quarter of an hour before supper-time; and no prisoner should be required to work after supper unless he has neglected to perform his stated quantity in the ordinary working hours.
15. The eating and drinking vessels in which the food is distributed should not be collected till half-an-hour after the prisoners have received them, at breakfast and supper, and till 40 minutes after, at dinner.

X. The resident medical officer of any prison shall have power to make any variations in particular cases, from the foregoing dietaries, which he may deem necessary, always, however, recording the same in writing.

The foregoing Rules for the Dietaries of the Prisons in Scotland have been certified and approved by Sir George Grey, in terms of Section 9 of "The Prisons (Scotland) Administration Act, 1860;" dated 1st May 1866.

ARTICLE IV.—*Clinical Notes from the Dumfries Royal Infirmary.* By JOHN TURNER, M.D., House-Surgeon.

OUR experience of the treatment of typhoid fever in this Institution has of late years been so very favourable, that it may be deemed not unworthy of a brief notice. Our treatment of this disease has been conducted on the principle that all fevers, when uninterfered with by art, tend to run a certain definite course, and to terminate naturally in the re-establishment of health; and that the object of the physician should be to endeavour to guide the morbid process through its natural progress to a favourable termination. He should simply aim, therefore, at a spontaneous recovery by supporting the vital powers of his patient, and assisting nature in the excretion of the effete morbid products, so as to keep him alive till the fever poison has expended its force. As Pitcairn said, "In a fever you can only employ patience and judicious measures to meet the difficulties of the case." "You may *guide* a fever—you cannot *cure* it." We may assist the *vis naturæ medicatrix*, but we must not rashly interfere with it. Accordingly, the treatment of the cases of typhoid fever admitted to this hospital has been characterized by its extreme simplicity, and its avoidance of the "nimia diligentia" of physic. It may be comprised in the carrying out of the few following indications,—viz., strict attention to cleanliness and ventilation; frequently the administration of a simple febrifuge mixture to encourage the eliminating action of the skin and kidneys; continuous and abundant support from the commencement of the fever, with strong beef-tea and milk; and free stimulation, in exceptional cases, with port wine or whisky, when these seem to be urgently demanded by the failing condition of the pulse, and the tendency to collapse. The chloride of sodium and the dilute nitro-muriatic acid were also sometimes employed, and apparently with a good effect. Our treatment, indeed, very much resembled that advocated by Dr King Chambers of London, in his admirable "Clinical Lectures," which consisted in the use of the dilute nitro-muriatic acid, and the continuous administration of liquid nutriment in the shape of milk and beef-tea. The results of our treatment carried out on these principles were as follows: Of 134 cases of well-marked typhoid fever admitted to the house during the last three years, 5 only proved fatal, or 1 in 26⅘, giving thus the remarkably low death-rate of 3·7 per cent.; a result highly favourable, like that obtained by Dr Chambers from a similar mode of treatment, and contrasting strikingly with that following upon other modes of practice. It must, however, be observed that a number of these cases were treated without the administration of any drug whatever: the disease being simply allowed to run its natural course, and the system supported by the continuous and liberal administration of beef-tea and milk. In many cases of scarlatina and rubeola, the same course was adopted (no medicine whatever being administered), and with the happiest results; not a single fatal case of these diseases occurring. An epidemic of variola was treated in much the same manner, and with nearly equal success. Of 70 cases admitted into the wards, only 4 died, or 1 in 17½; the death-rate being thus so low as 5·7 per cent. One of these fatal cases, however, occurred in a surgical patient who contracted smallpox in the house, and whose system was weakened by previous disease.

In many of these cases of typhoid fever, brought from the filthy and ill-ventilated closes of the town, it was very remarkable to observe the sudden amendment that took place immediately after their admission to the house—a marked improvement in the general symptoms of the disease occurring a few hours after their removal to the comfortable and well-ventilated wards of the hospital.

In the great majority of these cases we observed the eruption so characteristic of typhoid fever—the successive daily eruption of a few small, very slightly elevated, rose-coloured spots, disappearing on pressure, each spot continuing visible for a few days only.

In connexion with this subject of the supporting and no-drug plan of treatment of fever, I may observe, that our cases of pneumonia, treated on the restorative principles so long and zealously advocated by Professor Bennett of Edinburgh, have been eminently successful. Those cases left almost entirely to the unassisted processes of nature, have invariably done well. In these cases, also, we have had ample opportunity of observing the remarkable and interesting correlations of the pulse, the respiration, and the temperature of the body, so clearly enunciated in Dr Aitken's " Science and Practice of Medicine."

In looking over the available hospital records, I find mention made of 71 cases of pneumonia that were treated in these wards from the year 1820 to 1836. Of these, 12 died, or about 1 in 6. The cause of this large mortality it is not for me to decide. It is worthy of remark, however, that during these years venesection was freely practised, and that the restorative plan of treatment had not then come into vogue.

That peculiar and rare form of syphilis, known by the name of sibbens or yaws, is still pretty frequently seen in this district, where it has long been epidemic. It is, undoubtedly, very contagious. We had lately an interesting case of this disease contracted by a boy twelve years of age, which proved fatal from intractable ulceration and sloughing of the fauces and larynx. In this case the disease had spread from the father through a whole family of young children.

In connexion with the important discussion as to the relative success attending the performance of the major operations in surgery in the metropolitan and rural hospitals, the statistics of this infirmary at least sustain the reputation of the latter. After a careful scrutiny of the available hospital records, I find that, since the year 1835, the following capital operations have been performed with the following results.

Operations.	Total Cases.	Cured.	Died.	Death-rate.
Amputation of thigh, .	26	18	8	30·7
Amputation of leg, .	22	19	3	13·63
Amputation of arm, .	8	6	2	25·
Amputation of forearm,	3	3	0	0
Lithotomy, . .	6	6	0	0
Ovariotomy, . .	1	1	0	0

That these results are highly satisfactory, is clearly seen by comparing them with those of the following table, which exhibits a condensed view of some very careful and extensive investigations made as to the average rate of mortality of the major operations in surgery in the Parisian hospitals, and also that of the London, British provincial, and rural hospitals, as drawn up in the Sixth Report on Public Health by the Medical Officer of the Privy Council, 1863.

	Amputation of Thigh.	Amputation of Leg.	Amputation of Arm.	Amputation of Forearm.	Lithotomy.
Parisian hospitals, .	74·28	70·0	38·45	25·0	...
London hospitals, .	36·0	30·6	22·9	13·1	14·1
Provincial hospitals,	34·5	21·0	26·3	7·6	12·1
Rural hospitals, .	24·0	16·9	17·7	8·5	16·6

Chloroform, since its first introduction into surgery, has been freely used in this infirmary, without a bad result accruing in any case. Prior to its use, there is a curious case mentioned in the hospital reports, of a man about to undergo amputation of the leg, who actually died from fright when being carried from his bed to the operation-table.

ARTICLE V.—*Cases of Thoracic Aneurism.* By D. RUTHERFORD HALDANE, M.D., F.R.C.P.E., Physician to the Royal Infirmary of Edinburgh.

I HAVE put together the following cases of thoracic aneurism which terminated fatally during the past session, as illustrative of certain points of diagnosis, but more particularly as examples of some of the modes in which death occurs in that disease. Rupture of the sac is doubtless the most striking mode in which death in cases of thoracic aneurism takes place; and though certainly much more frequent than any other single mode of termination, its frequency is perhaps somewhat exaggerated; according to my experience, not more than one-half of all cases dying in this way, the other half being cut off by interference with the respiration or circulation, or by the general constitutional disturbance. Of the four following cases, rupture of the sac occurred in two, but was the direct cause of the fatal result in only one.

CASE I.—*Aneurism of Commencement of Descending Aorta. Death from Rupture into Left Lung and Pleura. Old Tubercle in Lungs.*

Isabella Mackay, æt. 44, was admitted into Ward XIII. on the 15th of February 1866, complaining of palpitation, cough, and shortness of breath. From the suffering condition of the patient it was impossible to obtain from her any clear account of the history of her illness, or to institute a careful physical examination. It appeared, however, that she had been out of health for at least a year; that the catamenia had ceased eight or nine months ago; that for the last three months she had suffered much from palpitation and shortness of breath; and that for the last three days she had spat up small quantities of fluid blood. There was no history of a rheumatic attack.

After admission she passed a tolerably quiet night, but was disturbed by occasional attacks of dyspnœa. The sputa consisted of frothy mucus streaked with blood; occasionally she expectorated small quantities of pure fluid blood. On percussion there was some dulness in the left subclavian and the left suprascapular regions, and the breathing had a somewhat cooing character. Bronchitic rales were abundant over the chest. Cardiac dulness was not extended. There was no murmur either at the base or apex of the heart, but at the base the second sound had a very peculiar *twanging* character; this character was better marked in the aortic than in the pulmonary area, was propagated pretty distinctly down the sternum, and was perceptible, though faintly, over the apex of the heart. There was no abnormal pulsation. On the 17th, she took her dinner with the other patients. Shortly afterwards the nurse was alarmed by finding her almost asphyxiated, and expectorating quantities of bright red blood. One of the house-physicians was immediately summoned, but before he arrived the patient was dead.

Post-mortem Examination.—On opening the chest, the left pleura was found filled with blood, separated into serum and coagula. The thoracic organs were removed *en masse*. There were adhesions over the upper part of both lungs, especially dense on the left side. In removing the viscera there was found to be an aneurism of the commencement of the descending aorta, part of the posterior wall of which was formed by the eroded bodies of two of the upper dorsal vertebræ. The aneurism was found to commence an inch beyond the origin of the left subclavian artery; the anterior portion of the vessel was not affected, but the remaining two thirds of its circumference were dilated into a sac about the size of a hen's egg. The posterior and right walls of the sac were formed by the dorsal vertebræ, while its left side was closely incorporated with the back of the left lung. The communication between the sac and the lung had taken place close to the vertebræ, two inches and a half below the apex of the lung. In the neighbourhood of the communication, the pleura had been separated from the lung and had given way, permitting the escape of blood into the cavity of the chest. Blood was infiltrated into the pulmonary tissue around the seat of rupture, and had become coagulated there. The upper part of the left lung had a puckered appearance; in its apex was a cavity of the size of a small chestnut, having a distinct lining membrane; the surrounding pulmonary tissue was indurated, and of a very dark colour. In the upper part of the right lung was a mass of old cheesy tubercle of the size of a bean, and in the extreme apex was a cavity of the size of a small pea, close to which was an emphysematous bulla about the size of a marble. There was no induration of the surrounding pulmonary tissue. There was some emphysema of the margins of both lungs, most extensive at the base of the left. A large patch of pulmonary apoplexy was found in the central portion of the lower lobe of the right lung; consolidation was not complete, many of the air-cells in the affected part containing air. In this portion the bronchi were filled with coagulated blood. The heart was of the normal size, or a little smaller than natural. There was extensive atheromatous degeneration of the ascending aorta; and in the wall of the vessel immediately above the right semilunar valve were two or three small calcareous scales. The aortic valves were found competent, but were a little thickened and opaque from atheromatous disease. The mitral valve was healthy. Other organs were natural.

The short time this patient was under observation, and her suffering condition, prevented a complete examination of all the circumstances of her case; I was, however, satisfied, before her death took place, that she was suffering from a thoracic aneurism. Certain circumstances, doubtless, pointed to tubercle; such as the hæmoptysis, the dulness on percussion, anteriorly and posteriorly, over the upper part of the left lung, and the bronchitic rales in that situation. On the other hand, the age of the patient, taken in connexion with the comparatively short duration of her illness, was more advanced than would have been expected had the disease been tubercular; the distress was much greater than could be accounted for by the very limited lesion detected in the lungs; the bloody expectoration was more of the character met with in aneurism than in phthisis; finally, the second sound had a very peculiar twanging character. On post-mortem examination, an aneurism was certainly found, but not, I must say, in the situation in which I expected it. I looked for it in the ascending aorta, and believed that the character of the second sound was connected with its presence. The value of this change in the second sound has recently been commented on in this Journal, by Drs Warburton Begbie and Halliday Douglas,[1] who agree in considering that its presence is a valuable aid to our diagnosis in cases of aneurism. Its mechanism is not altogether satisfactorily explained; sometimes it appears to be generated, or at least to become intensified, within the sac, at others it is produced at the valves themselves. In this case the sound was, I conceive, quite unconnected with the existence of the aneurism, which was at too great a distance to have anything to do with a sound heard loudest over the aortic valves; it was, I have no doubt, the result of the increased rigidity of the semilunar valves, which still retained their competence. The sound, in fact, very much resembled that produced when a moderately tense string is thrown into vibration.

The above case is an illustration of the now well-known fact that an aneurism may go on leaking for some time before the fatal hæmorrhage takes place. At length a more extensive laceration of the wall of the sac took place, blood in large quantity escaped into the lung and was expectorated; at the same time the pleura was torn through, and the fatal gush of blood took place into the cavity of the chest. It was mentioned in the account of the post-mortem examination that a large patch of pulmonary apoplexy was found in the lower lobe of the right lung. In most cases, contrary to the opinion of Carswell, pulmonary apoplexy is the result of hæmorrhage into the tissue of the lungs, the result of great congestion, and does not depend upon hæmorrhage into the bronchi. In some cases, however, blood certainly does pass back from the finer bronchi into the air-cells, but in the cases of the kind which I have seen, the consolidation of the affected part has not been so complete as in ordinary examples of the lesion.

The only other point in this case calling for remark is the existence of tubercle in the lungs. The now generally received opinion of the rarity of the co-existence of aneurism and active pulmonary tubercle is certainly correct; but it is by no means uncommon to find in connexion with aneurism tubercle in a dormant or retrograde condition. I am inclined to believe that some at least of the cases which have been recorded as examples of the co-existence of active phthisis and aneurism have been misinterpreted. Some years ago, I examined the body of a man who had died in consequence of rapid disorganization of the left lung. The lung certainly presented very much the appearance of one in an advanced stage of phthisis. Masses of a soft yellow deposit were scattered through it; many of these had softened, and led to the formation of cavities. The right lung was perfectly free from disease. There was an aneurism of the descending aorta which pressed upon the root of the left lung. I do not believe that this case was an example of tubercle at all. I believe that the deposits in the left lung were the result of an inflammatory process or other lesion of nutrition, produced by the pressure of the aneurism upon the nerves and bloodvessels in the root of the lung. This is rendered in the highest degree probable, by the circumstance that the right lung was quite free from disease; whereas had the lesion of the left lung been tubercular, the right, almost certainly, would not have altogether escaped.

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[1] "On the Diagnostic Value of an Accentuated Cardiac Second Sound." By J. Warburton Begbie, M.D. June 1863. "Substernal Aneurism: Clinical Illustrations of its Diagnosis." By Dr A. H. Douglas. November 1863.

CASE II.—*Aneurism of Transverse Portion of Arch of Aorta involving left Pneumogastric and Recurrent Nerves. Tracheotomy. Death from Pyæmia on the seventeenth day after the Operation.*

Elizabeth M., æt. 38, admitted into Ward XIII., on the 28th January 1866, complaining of palpitation and attacks of severe difficulty of breathing. She stated that she was a widow, but it subsequently transpired that from the age of 14 she had been a prostitute, and had given birth to her only child at the age of 15. Her health had been good until about a month before admission; at that time, after exposure to cold and damp she began to suffer from cough, pain in the left side of the chest, and an uncomfortable beating sensation when at all agitated. The fits of coughing gradually became more severe, and were accompanied by attacks of extreme difficulty of breathing. Shortly after admission she was attacked with a spasm of dyspnœa, with croupy, crowing inspiration. There was considerable congestion and swelling of the face. Warm fomentations were applied to the throat, and ether was administered internally; in about half an hour the paroxysm passed off. Although the breathing became comparatively free, the cough was imperfect, and of a brassy laryngeal character. On examination with the laryngoscope, the epiglottis was found free from inflammation, but the posterior end of the vocal cords, which was the only part of them visible, were slightly reddened. On stethoscopic examination, the cardiac sounds were found to be normal; but over the manubrium of the sternum there was well-marked dulness on percussion, and on auscultation in that situation the first sound had a prolonged or *murmurish* character, which, when the heart's action was excited, became developed into a rather soft bruit. In this region there was also slight pulsation, most distinctly perceived by placing the stethoscope upon it, when the distal end was seen to vibrate. The neck was very short and thick, the trachea deeply seated; obscure pulsation was felt when the finger was passed behind the top of the sternum. The left radial pulse was rather weaker than the right. There was no difference in the size of the pupils. Over the whole chest respiratory sounds were distinct, but mixed with bronchitic rales, which were most abundant posteriorly and inferiorly. On applying the stethoscope over the seventh cervical vertebra, tracheal breathing was heard much more loudly than natural.

5th February.—Since admission she has had several attacks of dyspnœa; this morning on awakening she had a very severe one. Hot fomentations to the larynx, and the inhalation of steam gave relief. As, however, her life was evidently in danger during these attacks, I gave instructions to Dr Wyllie, my house-physician, to have everything in readiness for the performance of tracheotomy when the urgency of the case required it.

8th February.—This morning, at half-past seven, Dr Wyllie was called to see the patient and found her suffering from extreme dyspnœa; she was sitting up and struggling feebly to get to the window. The breath sounds were crowing, the efforts at inspiration being very laborious. Hot fomentations gave no relief; and as the patient seemed at the point of death, Dr Wyllie proceeded to perform tracheotomy. From the shortness and thickness of the neck the larynx and trachea lay very deep and rendered the operation somewhat difficult. This, together with the presence of the aneurism, made it advisable to make the incision above the isthmus of the thyroid gland, and to give sufficient space it was continued upwards through the cricoid cartilage. On making the tracheal incision some venous blood escaped, but the hæmorrhage ceased on the introduction of the tube, and the operation was followed by immediate and marked relief to the patient. During the day she remained tolerably comfortable, suffering occasionally from cough, but in the afternoon it was discovered that the end of the tube had been coughed out of the trachea, the tube unfortunately, in consequence of the depth at which the windpipe lay, having been rather too short. On proceeding to introduce it, the director had no sooner touched the trachea, than a violent venous bleeding commenced, under which the patient nearly died. Re-introduction of the tube did not stop the bleeding, and as the breathing was easy at the time, the tube was removed, and cold and pressure were applied to the wound; the bleeding ceased just as the patient seemed on the point of death. Slight stimulants were administered, and she gradually recovered.

9th February.—Professor Spence saw the patient and recommended that the tube should be re-introduced. This was accordingly attempted to be done by his house-surgeon, but unsucessfully, the wound in the trachea having contracted, and swelling of the soft parts having occurred. The patient was so weak that after the attempt she fainted.

10th February.—The patient is now pretty easy; she slept tolerably well; can swallow and is cheerful. The wound has taken on unhealthy action, discharge free and fetid.

15th February.—The wound now looks tawny and sloughy with here and there phagedenic action. Professor Spence again saw the patient and ordered nitric acid to be freely applied, and to be followed by charcoal poultices.

The sloughs came away on the 18th; the wound looked pale, the edges were abrupt and without granulations. On the 21st, slight hæmorrhage occurred on two or three occasions after paroxysms of coughing, and was renewed on the mornings of the 23d and 24th. She grew gradually weaker, and died about 11 A.M. of the 25th.

Post-mortem Examination.—The wound in the neck was in a sloughy condition. On opening the chest, the pleura on the left side was coated with a layer of soft yellow lymph little thicker than cream. Throughout this lung were several large secondary abscesses, the walls of which had a sloughy appearance. The right pleura and lung were healthy. The heart was loaded with fat; its substance was soft and flabby. The ascending aorta and lower part of the transverse portion was healthy; but from the upper wall to the transverse portion arose an aneurism of an oval form of the size of a large hen's egg, the long axis of which was exactly parallel to the direction of the trachea. Nearly the whole of the upper half of the sac was occupied by layers of coagulated fibrin. The innominate, left carotid, and left subclavian, arose from the anterior wall of the sac. Posteriorly the sac was closely applied to the trachea in a space two inches in length, from immediately above the bifurcation of the tube to very near the upper border of the sternum. The trachea was consequently pushed a good deal backwards. On the right side the nerves were not interfered with, but on the left the pneumogastric was closely tied down to a portion of the anterior wall of the sac, while, posteriorly, the recurrent was almost completely incorporated with the wall of the sac. A quarter of an inch beyond the origin of the left subclavian the aorta at once resumed its normal calibre.

The diagnosis in this case presented little difficulty; abnormal pulsation; dulness on percussion over the upper part of the sternum; difference in the radial pulses; paroxysmal difficulty of breathing and laryngeal cough, with absence of all other signs of disease of the larynx, indicated clearly enough an aneurism of the aorta as the cause of the patient's sufferings. From the position of the dulness and of the pulsation, it seemed probable that the transverse part of the arch was affected; while the character of the dyspnœa gave farther support to this opinion. The dyspnœa, as already mentioned, was paroxysmal, due apparently to irritation of the pneumogastric or recurrent nerves. There was no indication of considerable direct pressure upon any part of the respiratory tubes, for in the intervals between the paroxysms the breathing was easy, and auscultation showed that air freely entered both lungs. These considerations had a very important bearing on the question of treatment. At first the paroxysms yielded to inhalations of steam, and antispasmodics; but they became so severe that it was evident that a very slight increase in their duration or severity must prove fatal to the patient. Accordingly, from a very early period, the probability that it would be necessary to perform tracheotomy was kept in view. That under circumstances such as those detailed, tracheotomy is called for, cannot, I think, admit of doubt. The patient may die during a paroxysm; while by making an opening below the glottis, this risk at least is removed. Tracheotomy, of course, is only a palliative; it exerts no curative influence on the disease; it even introduces a new element of danger; but as it may be the means of prolonging life, the physician is called upon, in certain circumstances, to recommend its performance. There is, however, only a limited number of cases in which it is applicable. If the difficulty of breathing is due to direct pressure upon the trachea or bronchial tubes, the operation can be expected to do no good; it is when the dyspnœa is occasioned by spasmodic closure of the glottis, the result of irritation of nerves, that tracheotomy is useful. The above case illustrates the value of the operation in prolonging life. I have no doubt from what I heard of the paroxysm in the morning of the 8th, that the patient would have died at that time had the operation not been performed; as it was, it afforded immediate relief. I have several times seen tracheotomy performed in cases of aneurism; but in none was life prolonged so considerably as in the above case. The operation, it must be borne in mind, was performed under great disadvantages; the neck was uncommonly short and fat; the trachea was naturaly deeply seated, and was pushed still farther back by the tumour; the patient had led a dissipated life, and was of an unhealthy habit of body. Had the circumstances been slightly different, the result might have been very satisfactory; had the neck been a little longer; had the tube remained in the trachea; and had bad action of the wound and consequent pyæmia not set in, life might have been prolonged with tolerable comfort for a considerable time. That in the actual circumstances of the case death did not occur till the seventeenth day after the operation is remarkable; and constitutes, in my mind, a strong argument for the performance of tracheotomy in suitable cases. In most cases which I have seen, the operation has been delayed too long, and death has either been due to exhaustion, or to accumulation of mucus in the bronchi, and inability to expectorate; in this case, however, the immediate results of the operation were eminently satisfactory, and the danger arising from the occurrence of spasms was entirely removed.

CASE III.—*Aneurism within Pericardium, pressing upon Pulmonary Artery and Right Bronchus. Gangrene of Lung. Rupture of Aneurism into Right Bronchus.*

George Napier, æt. 49, a joiner; admitted into Ward V., on the 8th June 1866, complaining of great pain and uneasiness in the cardiac region.

The patient stated that he had been a healthy man till about three months before; his only complaint being from occasional headaches and rheumatic pains in the joints, which never compelled him to lay up. About that time he began to suffer from attacks of palpitation, excited by any unusual exertion, and accompanied by breathlessness. At the same time he began to suffer from pain in the precordial region, and had occasional attacks of giddiness. These symptoms gradually increased in severity; so that about six weeks before his admission, he was compelled to relinquish his employment. He could not refer his suffering to any injury or unusual exertion. A fortnight ago, after the difficulty of breathing had been unusually severe, he spat up one day several small quantities of blood.

On admission, the patient was a rather spare, but strongly made man, with a good colour. He complained of great uneasiness in the region of the heart, with pain in the back about the angle of the right scapula. Breathing difficult, more so at some times than at others, though the dyspnœa did not occur spasmodically. His appetite was good, and his other functions were normally performed.

On examination, the apex of the heart was found to beat one inch below the left nipple, and a little to its outer side. Cardiac dulness somewhat extended. At the apex, the first sound was unsatisfactory, while there was a marked murmur with the second. At the base there was a loud double murmur, that with the second sound being heard very distinctly down the sternum, and with peculiar distinctness over the xyphoid cartilage. The right side of the chest was not so prominent as the left, and did not expand so freely on full inspiration. In front, resonance was normal over both lungs, but posteriorly percussion was decidedly impaired over the right. Breath sounds were very feeble over the right lung; over the left lung, posteriorly, respiration was somewhat harsh. Coarse crepitation was audible over both bases.

13th June.—Last night he was seized during sleep with a spasm of breathlessness. For about twenty minutes he gasped for breath, and seemed in great agony. The inhalation of chloroform gave him great relief, and the attack at once subsided when he was sufficiently relieved to be able to take some brandy and water.

15th June.—Since last report he has had several severe fits of breathlessness, and last night seemed on the point of expiring in one of them. During the spasm his face was deadly pale, and covered with a cold sweat; at one time, however, his faced flushed greatly, and even became purple, but this lasted for only a very few seconds.

17th June.—Since admission the patient has lost much flesh. He expectorated a large quantity of thick tenacious mucus, now and then tinged with blood.

18th June.—There were to-day distinct clots of blood in the patient's sputum. The nurse noticed that the patient's breath had a very fetid odour; but this was not appreciable at visit.

21st June.—Patient had been gradually getting weaker since last report. About noon he had an attack of dyspnœa which lasted nearly an hour. After he came out of it he was very weak and exhausted. He gradually sank, and died about five o'clock. While the body was being removed to the deadhouse, three or four ounces of blood escaped from the mouth.

Post-mortem Examination.—The heart was enlarged, weighing 16 ounces. The margins of the aortic valves were somewhat thickened and retracted, and manifestly incompetent; the mitral valve appeared to be competent, but its margins were somewhat thickened. Immediately above the aortic valves an aneurism of the size of a hen's egg arose from the left side of the vessel; it extended upwards and to the right side, and was closely applied to the pulmonary artery, particularly to its right division, which was almost occluded. It also pressed upon the right bronchus, which was adherent to it. On laying open the bronchus, several minute openings communicating with the sac were found. Examined from the interior, several clots, some adherent to the walls of the sac, were found; it was also seen that the wall of the vessel which had been adherent to the bronchus was gone, and that the wall of the sac in this situation was formed by the bronchus, the cartilages of which were exposed. The right lung contained several patches of hæmorrhagic consolidation, and in the upper lobe was an extensive patch of gangrene. The left lung was congested, and contained several hæmorrhagic patches.

When this patient was admitted, he was at first, and on superficial examination, supposed to be simply suffering from disease of the aortic valves. But the severity of the symptoms soon attracted attention, and a more minute examination led me to the conclusion that, in addition, he had an aneurism, which was the chief cause of his sufferings. I was led to this belief chiefly by the condition of the right lung; it was manifest that air was entering it imperfectly, and as other signs of disease in it were absent, and as the left lung was essentially healthy, it seemed highly probable that the cause of it was pressure exerted upon the right bronchus. There was no positive sign of aneurism; but the character of the dyspnœa and the fixed pain referred to the right side of the spinal column, led me to the diagnosis that there was an aneurism arising within the pericardium and pressing upon the right bronchus. The progress of the case was unusually rapid, and the mode of fatal termination appears to me peculiarly interesting. Death was not, I believe, due to the rupture of the sac, for the openings of communication with the bronchus were minute, and the quantity of blood lost was altogether inconsiderable; it was in great part, I think, the result of the pressure on the pulmonary artery. Pressure upon the pulmonary artery is a more common cause of suffering and death in the case of aneurisms arising immediately above the aortic valves than is perhaps generally recognised; I have seen several cases where death has appeared to be due to this cause. In one case which came under my notice, and of which the preparation is in my possession, there were two aneurisms; the one, about the size of a bantam's egg, arose from the left side of the vessel immediately above the valves, and extended backwards and somewhat to the right; the other was an aneurism of the anterior and lower walls of the transverse portion of the arch, which projected downwards so as at one part almost to meet the other. Between these aneurisms the pulmonary artery passed. The main trunk of the vessel and the left branch were somewhat, though not very greatly compressed; while the right branch, which was interponed between the sacs where they approached nearest to one another, was completely occluded, or at least merely the smallest chink was left. In this case the symptoms increased very rapidly in severity, and the patient died from the gradual supervention of asphyxia. In the case now under consideration, the pulmonary gangrene was, I apprehend, occasioned by the cutting off the supply of blood, caused by the almost complete occlusion of the right branch of the pulmonary artery. That the pulmonary artery, besides supplying the blood which has to undergo the process of oxygenation, has also a share in conveying blood for the nourishment of the lungs themselves, is now pretty generally admitted. It is not, therefore, surprising that occlusion, more or less complete, of a branch of the vessel should lead to death of a corresponding part of the lung. I have several times met with cases of pulmonary gangrene which were manifestly due to obstruction by embolisms of considerable branches of the artery; and in the present case, the deprivation of the due supply of blood occasioned by the pressure of the sac had the same effect. It is worth noting that the gangrene was in the upper part of the lung, the situation where the supply of blood would doubtless be most deficient. The existence of gangrene was not suspected during life. One morning the nurse noticed a peculiar fetor of the breath; but as it had disappeared by twelve o'clock, and was never again observed, I did not attach any value to the observation. I believe, on the whole, that the low state produced by the gangrene, aggravated by the weakness occasioned by paroxysms of dyspnœa, was the cause of the fatal result.

CASE IV.—*Very large Aneurism, presenting externally. Fatal from Pressure on Trachea and Pulmonary Artery.*

William Miller, æt. 39, ale-bottler, admitted into Ward V., 7th July 1865, complaining of a large pulsating tumour in the upper part of the chest. The patient stated that his habits had been generally temperate, and that his health had been good until three years ago, when, without any known cause, he began to feel occasionally a pretty severe pain in the chest. The pain was referred to about the middle of the sternum, and a little to its right side. He was subject to this pain for the next two years, but his general health continued excellent, and he was able for his ordinary employment. At that time he first noticed a "beating" tumour, about the size of a bean, over the seat of pain. The pain became more severe, and he began to have sensations of itching of the skin covering the tumour. For six months the tumour remained of much the same size, but it then began to increase rapidly, and the pulsation became more powerful. He was, however, able to remain at his work until a week ago, but was then obliged to discontinue it on account of the severity of the pain.

On admission, the patient was a strong robust man of middle height. His only complaint was of a large pulsating tumour situated in the upper part of the thorax, in which he occasionally felt some pain. The tumour, about the size of a child's head, was situated in the middle line, but inclined slightly to the right. It was of a conical shape, with a somewhat oval base, the long axis extending from right to left. It pulsated distinctly, and an irregular expansile beat could be felt. There was no redness of the skin over the tumour. A margin of the manubrium of the sternum was present above the tumour, but no bone could be felt over the prominence itself; a considerable portion of the sternum, the cartilages, and portions of the 2d, 3d, and 4th ribs, were evidently gone. There was absolute dulness on percussion over the tumour, extending for some distance round it. The heart's impulse was very indistinct and diffused. The heart's sounds over the presumed seat of the apex were faint and distant, but free from murmur. Higher up, the second sound had a markedly accentuated character, which was most marked over the tumour itself. Pulse, in both radial arteries, small and feeble. There was no dulness posteriorly. Percussion and auscultation of lungs natural. He was ordered five-grain doses of iodide of potassium, to be taken three times a-day; and some time afterwards a belladonna plaster was directed to be applied over the tumour.

For the next four months there was no great change in his state. His general health continued good, his appetite was fair, and the pain decidedly diminished. The tumour did not increase at all in size, and certainly felt firmer than at the time of admission. On the 12th of November, having complained for a day or two before of occasional difficulty of breathing, Dr Wyllie was sent for to see the patient about 11 P.M., and found him sitting up in bed rocking to and fro with his hand over the tumour and suffering from great dyspnœa. The breathing was very noisy, but had not the laryngeal character. The patient also complained of severe pain over the tumour. A draught containing ether and morphia was administered, and though the patient passed a rather restless night, he was quite relieved next morning. The patient then stated that the pain and dyspnœa had supervened upon a severe fit of coughing.

After this attack, he never regained his former state of health. Without publishing the detailed reports, it seems sufficient to say, that for the next seven months there was always a certain degree of breathlessness, with severe paroxysmal exacerbations recurring once a-week or once a-fortnight. His appetite gradually fell off; and he stated that on swallowing food, it sometimes seemed "to stick" about the middle of the chest. He had never vomiting. In the report of the 6th June, it is stated that the fits of dyspnœa which had occurred at intervals of from a week to a fortnight were now much more frequent, and that for the last two days he had not had more than an hour's rest at a time. He also began to refuse food.

18th June.—Fits of dyspnœa had been very frequent and urgent; and this afternoon one came on which exhausted him very much. Soon afterwards he expressed a wish to go to stool, and on being helped back to bed, he lay back to rest for a moment, as he said, in the arms of the nurse, and expired almost without a struggle.

Post-mortem Examination.—On removing the integuments, and examining the tumour it was found that the clavicles, and the first rib on each side, as well as the sternum, as low as the level of the first rib, were not affected; but the sternum, as far down as the upper border of the fourth rib, the cartilages, and bodies of the second and third ribs, and the upper part of the fourth, were gone. The chest was opened by sawing through the ribs externally to the tumour. When the hand was introduced into the chest, it was found that the part of the tumour within the chest was larger than that which projected externally. The tumour, which was inseparably connected with the anterior walls of the chest, extended backwards, rather inclining to the right side, to the vertebral column, with which, at one point, it came in contact, though not connected with it. The part external to the wall of the chest consisted of a single sac; the part within consisted of several large lobes. The lungs were pushed aside, and the heart was displaced downwards and backwards.

The aneurism commenced immediately above the aortic valves. It arose from the whole of the ascending portion of the vessel to within half an inch of the origin of the innominate. Here, however, where the aneurism ceased, the aorta resumed at once its normal calibre. The transverse portion of the arch was displaced backwards. The sac, at its lower part, was in contact with the right auricle of the heart; and the superior vena cava was so closely applied to it that it must have been somewhat compressed. The pulmonary artery lay between two lobes of the sac, and it, as well as its left branch, were not compressed; but the calibre of the right branch, which, in its passage to the root of the lung, was pressed upon by the sac, was much diminished. The sac was not adherent to either the trachea or the œsophagus, and was not, in fact, in contact with them, cellular tissue and enlarged glands intervening, but both of these canals had evidently been subjected to considerable pressure. The anterior margin of the right lung was very closely adherent to the sac, at the level of the second rib. The heart weighed 14 ounces; it was healthy in structure, and the valves were natural. The dimensions of the sac were the following: measurement of the external prominence along the convexity from above, downwards, nearly 8 inches; of the same, from side to side, at a level with the interval between the 2d and 3d ribs, 8½ inches; extreme depth of the sac from before, backwards, 8½ inches. The greater part of the sac, but especially that portion which projected externally, was lined by firm stratified layers of decolorized fibrin.

This case is interesting from the great size the sac had attained; I have never met with a thoracic aneurism of equal dimensions. From the comparative immunity enjoyed by the patient, at least for a long time, from symptoms of pressure, I was led to believe that the great bulk of the sac was external to the thoracic wall, and that the portion within the chest would be of moderate dimensions. Post-mortem examination showed this not to be the case, and when the great size of the sac was seen, it was difficult to understand how there had been till shortly before death so little interference with the functions of the thoracic viscera. In fact, it was only because the internal portion of the sac consisted of lobules, between which important organs lay, that life was so considerably prolonged.

When the patient came into the hospital the nature of the case was evident on the most superficial examination. For the first two years before the appearance of the external swelling, however, pain seems to have been the most important symptom. This is not unfrequently the case; and in aneurisms, particularly of the descending aorta, where for a long time physical diagnosis may give no assistance, the value of persistent pain as a diagnostic sign is great. The course of the disease in this case was unusually slow, considering the great size the aneurism attained; death at last seemed due to exhaustion occasioned by pain, sleeplessness, and dyspnœa due chiefly to pressure on the trachea, but partly no doubt to pressure on the right branch of the pulmonary artery. Thoracic aneurisms, as is well known, seldom rupture externally; this is probably chiefly owing to the circumstance that the external wall of the sac is at some distance from the direct line of the current of blood, and that no vessels arise near the portion projecting externally; two circumstances which must favour the deposition of fibrin.

The only special treatment of the above case consisted in the administration of full doses of iodide of potassium. Under its use the pains decidedly diminished. Tracheotomy, to relieve difficulty of breathing, would manifestly have been out of place.

INFORMATION REGARDING MEDICAL EDUCATION AND EXAMINATIONS.

THE following are the Recommendations of the General Medical Council on the subject of Medical Education and Examinations, agreed to at their last meeting:—

I. PRELIMINARY EXAMINATION.

1. That testimonials of proficiency granted by the national educational bodies according to the subjoined list may be accepted, the Council reserving the right to add to, or take from, the list.

1. A Degree in Arts of any University of the United Kingdom or of the Colonies, or of such other Universities as may be specially recognised from time to time by the Medical Council.
2. Oxford Responsions or Moderations.
3. Cambridge Previous Examinations.
4. Matriculation Examination of the University of London.
5. Oxford Middle Class Examinations (Senior).
6. Cambridge Middle Class Examinations (Senior).
7. Durham Middle Class Examinations (Senior).
8. Durham Examinations for Students in Arts in their second and first years.
9. Durham Registration Examination for Medical Students.
10. Dublin University Entrance Examination.
11. Queen's University, Ireland, two years' Arts Course for the Diploma of Licentiate in Arts.
    12. Preliminary Examinations at the end of A.B. Course.
    13. Middle Class Examinations.
    14. Matriculation Examinations.
15. First Class Certificate of the College of Preceptors.
16. "Testamur" granted by Codrington College, Barbadoes.
17. Degree of Associate of Arts granted by the Tasmanian Council of Education, with a certificate that the Student has been examined in Latin and Mathematics.

2. That students who cannot produce any of the testimonials referred to in the first recommendation be required to pass an examination in Arts, established by any of the bodies named in Schedule (A.) to the Medical Act, and approved by the General Medical Council.

3. That the examination in general education be eventually left entirely to the examining boards of the national educational bodies recognised by the Medical Council.

4. That no certificate of proficiency in general education, which does not affirm the proficiency of the candidate in Latin, be deemed a sufficient proof of preliminary education previous to the commencement of professional studies.

5. That the various educational and licensing bodies be requested to transmit to the Registrar of the General Council, returns, embodying any alterations which they may from time to time introduce into their courses of general study and examinations, which qualify for the registration of medical students; and that a copy of such returns be sent by the Registrar, as soon as convenient, to each member of the General Council.

N.B.—The following recommendations, printed in italics, were passed by the General Medical Council, May 25, 1866, but are not intended to come into operation till October 1, 1868.

1. *That the following subjects constitute a minimum to be required of candidates for preliminary examination, viz.:—*

Compulsory Subjects—

1. *English Language, including Grammar and Composition.*
2. *Arithmetic, including Vulgar and Decimal Fractions; Algebra, including Simple Equations.*
3. *Geometry: First Two Books of Euclid.*
4. *Latin, including Translation and Grammar.*

And 5. *One of the following*

Optional Subjects—

1. *Greek. After the year* 1869, *Greek shall be one of the compulsory subjects.*
2. *French.*
3. *German.*
4. *Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.*

2. *That certificates of proficiency, to be received from all bodies legally authorized to examine in general education in Great Britain and Ireland, and from the several licensing bodies enumerated in Schedule (A) to the Medical Act in Great Britain and Ireland, shall bear evidence that the candidates have been examined and approved in at least the above subjects.*

3. *That in the case of certificates received from similar educational and licensing bodies in other parts of the empire and foreign countries, satisfactorg evidence shall be given to the Medical Council, or Branch Councils, that such certificates are equivalent to those recognised in the United Kingdom.*

4. *That it shall be delegated to the Executive Committee to prepare annually and lay before the Council for recognition a list of examining bodies, whose examinations shall fulfil the conditions of the Medical Council as regards preliminary education.*

5. *That the regulations of the General Medical Council as to preliminary education, adopted during the present Session, shall not come into operation till October* 1, 1868, *and that in the meantime the previous regulations shall remain in force.*

II. REGISTRATION OF MEDICAL STUDENTS.

1. Every medical student shall be registered in the manner prescribed by the General Medical Council.

2. No medical student shall be registered until he has passed a preliminary examination, as required by the General Medical Council.

3. The commencement of the course of professional study recognised by any of the qualifying bodies, shall not be reckoned as dating earlier than fifteen days before the date of registration.

4. The registration of medical students shall be placed under the charge of the Branch Registrars.

5. Each of the Branch Registrars shall keep a Register of Medical Students.

6. Every person desirous of being registered as a medical student shall apply to the Branch Registrar of the division of the United Kingdom in which he is residing, according to a form, which may be had on application to the several qualifying bodies, medical schools, and hospitals; and shall produce or forward to the Branch Registrar a certificate of his having passed a preliminary examination, as required by the General Medical Council, and a statement of his place of medical study.

7. The Branch Registrar shall enter the applicant's name and other particulars in the Students' Register, and shall give him a certificate of such registration.

8. Each of the Branch Registrars shall supply to the several qualifying bodies, medical schools, and hospitals, in that part of the United Kingdom of which he is Registrar, a sufficient number of blank forms of application for the registration of medical students.

9. The several Branch Councils shall have power to admit special exceptions to the foregoing regulations as to registration, for reasons which shall appear to them satisfactory.

10. A copy of the Register of Medical Students, prepared by each of the Branch Registrars, shall be transmitted, on or before the 31st December in each year, to the Registrar of the General Council, who shall, as soon as possible thereafter, prepare and print, under the direction of the Executive Committee, an alphabetical list of all students registered in the preceding year, and supply copies of such authorized list to each of the bodies enumerated in Schedule (A) to the Medical Acts, and through the Branch Registrars to the several medical schools and hospitals.

11. The several qualifying bodies are recommended not to admit, after October 1870, to the final examination for a qualification under the Medical Acts, any candidate (not exempted from registration) whose name had not been entered in the Medical Students' Register at least four years previously.

In the case of candidates from other than schools of the United Kingdom, the Branch Councils shall have power to admit exceptions to this recommendation.

⁂ The Branch Councils are desired to take means to make these regulations known to the medical students at the various medical schools.

III. AGE FOR LICENSE TO PRACTISE.

1. That the age of twenty-one be the earliest age at which a candidate for any professional license shall be admitted to his final examination; that the age shall, in all instances, be duly certified; and that a return of any exceptions to this recommendation allowed by the licensing bodies, together with the reasons for such exceptions, be transmitted to the Branch Council of that part of the United Kingdom in which they have been granted.

2. That no license be obtained at an earlier period than after the expiration of forty-eight months subsequent to the registration of the candidate as a medical student.

IV. PROFESSIONAL EDUCATION.

1. That the course of professional study required for a license shall comprehend attendance during not less than four winter sessions, or three winter and two summer sessions, at a school recognised by any of the licensing bodies mentioned in Schedule (A) to the Medical Act.

2. That it be recommended to the several licensing bodies that the courses of instruction required by them be framed in such a manner as to secure a due share of attention, both to preparatory branches and to those more strictly connected with the practice of Medicine and Surgery; and that it be suggested accordingly to these bodies, that their regulations should be such as to prevent attendance upon lectures from interfering with hospital and clinical study.

3. That the Council will view with approbation any encouragement held out by the licensing bodies to students to prosecute the study of the natural sciences before they engage in studies of a strictly professional character.

V. PROFESSIONAL EXAMINATION.

1. That those licensing bodies which have not already done so, be requested to furnish a statement of the dates of their examinations and of the modes in which such examinations are conducted, whether by written, oral, or practical examination, and of the length of time a candidate is under examination in each or all of these ways; and that the Registrar transmit these reports to the members of the Council, in order that they may be taken into consideration at the next meeting of the several Branch Councils.

2. That the professional examination for any license be divided into two parts; the first embracing the primary or fundamental branches directly connected with the practice of Medicine and Surgery; that the former be not undergone till after the close of the winter session of the second year of professional study; and the latter or final examination, not till after the close of the prescribed period of professional study.

3. That the examination in Physics, Botany, and Natural History may be undergone at an earlier period than the first professional examination.

4. That the professional examinations be conducted both in writing and orally; and that they be practical in all branches in which they admit of being so.

5. That the professional examinations be held by the several licensing bodies, except in special cases, at stated periods, to be publicly notified.

6. That returns from the licensing bodies in Schedule (A) be made annually, on the 1st of January, to the General Medical Council, stating the number and names of the candidates who have passed their first as well as their second examinations, and the number of those who have been rejected at the first and second examinations respectively; and that the Registrar forward a sufficient number of forms, with a notice for their being returned in due time.

7. That it is not desirable that any University of the United Kingdom should confer any degree in Medicine or Surgery, whether that of bachelor, doctor, or master, upon candidates who have not graduated in Arts, or passed all the examinations required for the Bachelorship in Arts, or the examinations equivalent to those required for a degree in Arts.

VI. SUPERVISION OF EXAMINATIONS.

1. That the visitations of the Examinations, preliminary as well as professional, of the qualifying bodies, by the Branch Councils, or such of their members as they may depute, be continued during the ensuing year.

2. That the reports of the Visiters shall apply to every part of the Examinations of each body, and shall include a statement of the facts observed and of the opinions of the Visiters as to the efficiency of the Examinations; as also such remarks and suggestions on defects in them as circumstances may indicate.

3. That the reports of the Visiters be submitted in the first instance to the Branch Councils; and that thereafter the Branch Councils shall direct them to be printed and circulated confidentially amongst the members of the General Council, so that they may be in a condition, at the meeting of the General Council in 1867, to consider them maturely.

The only change in the requirements regarding the education of medical students which has taken place since last year is, that the General Medical Council has at last expressed itself decidedly on the subject of the Preliminary Examination. In spite of the expense incurred, the number of meetings held, and the floods of eloquence poured out, the Council has done little of a practical character; accordingly we are glad to find that they have at length agreed to resolutions which we doubt not they will see enforced. The Council has always expressed itself as strongly in favour of raising the standard of general education required from students of medicine, and there can be no question that it is only in this way that the character of the profession can be raised. Medicine in this country has ceased to be one of the learned professions, in the sense that the great bulk of practitioners have not that amount of education which may fairly be expected from gentlemen; and until matters have been altered in this respect, we have no right to expect that our profession should be treated by the public with that respect to which in itself it is entitled. The requirements of the Council in regard to the subjects for preliminary education are certainly not too high. Lads of seventeen about to enter on the study of a liberal profession may well be called upon to show that they are competent to express themselves correctly in their own language; that they are familiar with the ordinary rules of arithmetic, and the elements of geometry; and that they have a fair knowledge of Latin; and it is no great hardship that they should be able to profess one other language. The only point in regard to the requirements of the Council as to which any difference of opinion prevails, is as to the propriety of making Greek a compulsory subject after 1869. Though not holding very strong views on the matter, our own opinion is that it is a mistake. Greek may be made a compulsory subject with one of two objects; either to ensure a certain amount of mental training, in which case it is merely a means to an end; or, on account of the real value which a knowledge of it possesses, so many medical and scientific terms being derived from it. It is, we presume, with the latter object that a knowledge of Greek is to be made compulsory, but we fear that the anticipations of the Council will be disappointed. The standard for some time must necessarily be low, and we apprehend that the great majority of students who pass the required examination will abandon the study of Greek as soon as it has opened to them the portals of the medical profession.

The great change which is taking place in the education of our medical students is, that it is daily becoming more practical. We are far from wishing to see the system of lectures abandoned, but there is no doubt that it may be, and often has been carried too far. It is perfectly possible that, by attending lectures and reading, a student may have an excellent theoretical knowledge of his profession, while he may be utterly incompetent to recognise disease when he meets with it, or to apply the means which are necessary to its treatment. The *principles* of the different branches of medicine may be best imparted by the lecturer; it is only in the dissecting-room, the laboratory, or in the wards of an hospital, that practical knowledge can be acquired. Examinations are also becoming more practical; we believe that a large number of the failures at the Army Medical Examinations are due to the ignorance of candidates of the simplest practical details; that a young man who, for instance, can write an excellent paper on the injuries of the lower limb, may be found quite ignorant of the mode of adjusting a splint in a case of fracture of the fibula. We hope to see examinations before all our Boards become increasingly practical. We cannot expect that those who have just ceased to be students should, in virtue of the diplomas conferred upon them, be suddenly transformed into accomplished physicians, surgeons, or accoucheurs.

But we have a right to require, and the public has a right to expect, that no one should be allowed to incur the responsibilities of practice till he has proved that he is familiar with the more ordinary forms of disease, and that he is prepared to conduct himself creditably in an emergency which may at any moment arrive

During the last year an excellent start has been made in the supervision of examinations. This course must be attended with unmixed benefit; a more uniform standard will be secured, and deficiencies in any quarter cannot fail to be speedily corrected.

We anticpate that the medical profession is on the eve of important changes. We expect that the diminution in the number of medical students and consequently of practitioners which has already occurred, will continue and increase. This diminution is due to various causes. At no time have trade and commerce been more successful than at present; and there is a great temptation for parents to send their sons straight from the school-room to the counting-house rather than to enter them upon the study of an arduous profession, where the rewards are seldom brilliant. The public services are not in a satisfactory state; the military and naval authorities have too often abused the confidence of their medical officers, and it is notorious that the supply is not nearly equal to the demand. Finally, the higher standard of general and medical examinations doubtless exercises a deterring effect. From these and other causes the number of medical students is unquestionably diminishing. The result, we believe, will be advantageous to the profession. No doubt, there may be a difficulty in securing a suitable supply of medical assistance for the more remote districts, especially of Scotland and Ireland; but, with this exception, diminished numbers will be an unmixed advantage. Competition in the profession has been far too keen; medical men have accepted and have even struggled to obtain a far too low remuneration for their services; these evils can only be corrected by the number of practitioners undergoing a very considerable reduction.

The following pages contain an abstract of the regulations of the various licensing bodies. We have thought it unnecessary to print the requirements of the different Boards under the head of preliminary examinations. These requirements do not vary very widely, and the most recent information can at all times be obtained by addressing the Secretaries of the different bodies. Generally speaking, there are from two to four periods in the course of the year at which these examinations are held.

COURSE OF STUDY REQUIRED BY THE VARIOUS BOARDS OF THE UNITED KINGDOM.

	Age.	Anatomy.	Dissections.	Chemistry.	Practical Chemistry.	Materia Medica.	Physiology or Institutes of Medicine.	Surgery.	Practice of Medicine.	Midwifery.	Medical Jurisprudence.	Pathology or Morbid Anatomy.	Botany.	Natural History.	Practical Pharmacy.	Clinical Surgery.	Clinical Medicine.	Hospital Attendance.	Practical Midwifery.	Dispensary or Out-door Practice.	Vaccination.
	Years.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	
Edinburgh University, M.B. & C.M., . .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	3 mo., or 6 cas.	6	
University of Glasgow, M.B. & C.M., . .	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	do.	6	
University of Aberdeen, M.B. & C.M., .	21	12	6	6	3	6	6	6	6	6	3		3		3	6	6	24	do.	6	
University of St Andrews, M.D., . . .	22	12	12	6	3	3	6	6	6	3	3		3	3		6	6	24			
London University, M.B., ...	21	6	15	6	1 crs	1 crs	6	6	6	1 crs	1 crs				1 crs	2 yrs.	2 yrs.	4 yrs.	20 cas.	6	
University of Durham, M.B. & M.D. . .																					
Dublin University, M.B., ...		6		6	3 ms	6	6	6	6	6	3		3			9	9	18			
" " Surgical Diploma, .		18	18	6	3	6	18	18	6	6	3		3			27	27	27			
The Queen's University of Ireland, M.D.,		12	12	6	3	6	12	6	6	6	3		3	3	3 mos.	12	12	24	3 mo.		
Royal College of Physicians, London, .	21	12	12	6	3	3	12	6	12	3	3	6	3		3		9	24	20 cas.		
Royal College of Physicians, Edinburgh,	21	6	6	6	3	3	6	6	6	3	3	3	3		3	3	6	24	6 cases		
King and Queen's Col. of Phys. Ireland, .	21	6	12	6	6	6	6	6	6	6	6		6			6	21	27	6 mo.		
Royal College of Surgeons, London,* . .	21	12	12	6		3	12*	12	6	3					3	27*	9*	33			Cert.
Royal College of Surgeons, Dublin, . .	21	18	18	6	6	3	18	18	6	3	3					18	9	27			
Royal College of Surgeons, Edinburgh, .	21	12	12	6	3	3	3	6 or 12	6	3	3	3			3	6 or 12	6	24	6 cas.	6	Cert.
Faculty of Phys. and Surgeons, Glasgow,	21	12	12	6	3	3	3	6 or 12	6	3	3				3	6 or 12	6	24	6 cas.		
For Double Qualification by Royal College of Phys. and Surg. of Edinburgh,	21	12	12	6	3	3	3	6 or 12	6 or 12	3	3	3	3		3	6 or 12	6 or 12	24	6 cas.	6	Cert.
For Double Qualification by Royal College Phys. Edinburgh, and Faculty of Physicians and Surgeons of Glasgow,	21	12	12	6	3	3	6	6 or 12	6	3	3	3			3	6 or 12	12	24	6 cas.		
Apothecaries' Hall, England, ...	21	12	6	6	3	3	6		12	3	3	6	3		Appr.		27	27	20 cas.		9 mo.
" " Ireland, ...	21	6	12	6	3	3	6	6	6	6	3		3		Appr.	9	18	27	20 cas.		

English Poor-Law Board.—Candidates for the appointment of Medical Officer are required to be registered under the Medical Act, and must be legally qualified to practise both Medicine and Surgery, in virtue of Diplomas or Licenses granted by competent legal authority in England, Scotland, or Ireland.

Information respecting exceptions to these regulations under various circumstances, and other details as to the order in which, according to some Licensing Bodies, the courses should be taken out, etc., must be obtained by consulting the published Charts of the Colleges, etc. Students should apply to the Secretary to each Board which they intend to pass for a detailed copy of its Regulations.

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* Students from the Schools of Scotland are admitted to examination at the Royal College of Surgeons of England, if they have followed the course of study required by the regulations of the Royal College of Surgeons of Edinburgh. Students in Scotland, therefore, are not required to attend more than one course of Physiology, six months Clinical Surgery, six months Clinical Medicine, and twenty-four months Hospital.

MEDICAL SCHOOLS OF SCOTLAND, 1866–67.

WINTER SESSION.

Subjects.	University of Edinburgh.	Surgeons' Hall, Edinburgh.	University of Glasgow.	Anderson's University, Glasgow.	University of Aberdeen.	University of St Andrews.
Anatomy, Systematic and Practical, with Demonstrations.	Professor Goodsir.	Dr Handyside.	Dr A. Thomson.	Dr George Buchanan.	Professor Struthers.	...
Physiology, or Institutes of Medicine.*	Dr Bennett.	Dr Sanders.	Dr A. Buchanan.	Dr E. Watson.	Dr Ogilvie.	Dr Oswald Bell.
Chemistry, and Practical Chemistry.	Dr Playfair.	Dr Macadam. Dr C. Brown.	Dr T. Anderson.	Dr Penny.	Professor Brazier.	Dr F. Heddle.
Materia Medica and Therapeutics.	Dr Christison.	In Summer.	Dr Easton.	Dr Morton.	In Summer.	...
Practice of Medicine.	Dr Laycock.	Dr Haldane.† Dr Balfour.	Dr Gairdner.	Dr Cowan.	Dr Macrobin.	...
Surgery.	Professor Spence.	Dr Watson.† Dr Jos. Bell. Mr Annandale.	Prof. Lister.	Dr Macleod.	Professor Pirrie.	...
Midwifery.	Dr Simpson.	In Summer.	Dr Pagan.	In Summer.	Dr Dyce.	...
Natural Philosophy.	Professor Tait.	Mr Lees.	Professor W. Thomson.	Dr Taylor.	Professor Thomson.	Professor Fischer.
Natural History.	Professor Allman.	...	...	...	Professor Nicol.	...
General Pathology.	Dr Henderson.	Dr Grainger Stewart.	...	...	...	...
Clinical Medicine.	Drs Bennett, Laycock, and Maclagan.	Drs Sanders,‡ Haldane, Jackson, and J. M. Duncan.	Dr Bell and Dr Ritchie.		Drs Harvey and Smith.	...
Clinical Surgery.	Professor Syme.	Dr Gillespie.	Dr A. Buchanan and Dr Lyon.		Drs Keith and Pirrie.	...

* This course is equivalent to that given under the name of General Anatomy and Physiology in the English Schools. Special schedules are issued by the London Boards for their Scotch students which should always be inquired for.

† These are not conjoint courses, but separate ones by the gentlemen named.

‡ This is a joint course.

MEDICAL SCHOOLS OF SCOTLAND, 1866–67.

SUMMER SESSION.

SUBJECTS.	UNIVERSITY OF EDINBURGH.	SURGEONS' HALL, EDINBURGH.	UNIVERSITY OF GLASGOW.	ANDERSON'S UNIVERSITY, GLASGOW.	UNIVERSITY OF ABERDEEN.
Practical Anatomy and Demonstrations.	Professor Goodsir.	Dr Handyside.	Dr A. Thomson.	Dr George Buchanan.	Professor Struthers.
Botany.	Dr Balfour.	...	Dr W. Arnott.	Mr Hennedy.	Dr Dickie.
Materia Medica.	...	Dr Scoresby-Jackson.	...	...	Dr Harvey.
Midwifery.	...	Dr Keiller.* Dr Duncan.	...	Dr Wilson.	...
Medical Jurisprudence.	Dr Maclagan.†	Dr Littlejohn.†	Dr Rainy.†	Dr Leishman.	Dr Ogston.†
Comparative Anatomy.	Professor Goodsir.	Dr Handyside.	Dr A. Thomson.	...	Prof. Nicol.
Histology.	Dr Bennett.	Dr Sanders.	...	...	Dr Ogilvie. Mr J. Thomson.
Practical Chemistry.	Dr Playfair.	Dr Macadam.* Dr Crum Brown.	Dr T. Anderson.	Dr Penny.	Prof. Brazier.
Natural Philosophy.	...	Mr Lees.	...	...	Professor Thomson.
Natural History.	Professor Allman.	...	Dr Young.	...	Prof. Nicol.
Clinical Medicine.	Drs Bennett, Laycock, and Maclagan.	Drs Sanders,‡ Haldane, Jackson, and J. M. Duncan.	Dr Fraser and Dr R. Scott Orr.		Drs Harvey and Smith.
Clinical Surgery.	Prof. Syme.	Dr Gillespie.	Dr Morton and Dr G. Buchanan.		Drs Keith and Pirrie.

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* These are not conjoint courses, but separate ones by the gentlemen named.

† Drs Maclagan, Rainy, and Ogston, deliver their courses only in winter. Dr Littlejohn gives courses during both the winter and summer sessions.

‡ This is a joint course.

For additional Summer Courses on special subjects, see the Prospectus of each School.

LIST OF HOSPITALS, DISPENSARIES, ETC., IN CONNEXION WITH THE MEDICAL SCHOOLS OF SCOTLAND.

EDINBURGH.

ROYAL INFIRMARY, including LOCK HOSPITAL. Upwards of 560 Beds. Visits daily from 12 till 2 P.M. Physicians—Drs Bennett, Laycock, and Maclagan, Professors of Clinical Medicine; Dr Simpson, Clinical Professor for Diseases of Women; Drs W. R. Sanders, D. R. Haldane, Scoresby-Jackson, Clinical Lecturers; Dr J. Matthews Duncan (on Diseases of Women). Pathologist, Dr Grainger Stewart.

Surgeons—Mr Syme, Professor of Clinical Surgery; Professor Spence; Dr Gillespie, Clinical Lecturer; Dr P. H. Watson. Assistant Surgeon, Mr Annandale. Assistant Surgeon to Clinical Wards, Dr Joseph Bell. Consulting Surgeon, Dr Dunsmure. Ophthalmic Surgeon, Mr Walker. Dental Surgeon, Dr John Smith.

CHALMERS' HOSPITAL FOR THE SICK AND HURT. 24 Beds for medical and surgical patients. Physician, Dr Halliday Douglas; Surgeon, Dr P. H. Watson.

ROYAL MATERNITY HOSPITAL. 36 Beds; 279 in-patients and 380 out-patients annually. Consulting Physicians—Drs Simpson and Moir. Physicians—Drs Thomson, Weir, Keiller, A. Wood. Consulting Physician, Dr Begbie. Ordinary Surgeon, Dr Dunsmure.

ROYAL HOSPITAL FOR SICK CHILDREN. 40 Beds; average number of out-patients, about 5500. Consulting Physicians—Professor Christison and Dr C. Wilson. Physicians—Drs Graham Weir, Keiller, and Warburton Begbie. Extra Physicians—Drs Stephenson and Ritchie. Surgeon-Dentist, Dr Smith.

ROYAL PUBLIC DISPENSARY AND VACCINE INSTITUTION. About 11,500 patients annually. Medical Officers—Drs Spence, Pattison, Somerville, Sanders, Husband, D. Wilson, Ritchie, Stephenson, Cairns, Linton, Balfour, Macdonald. Physicians-Accoucheurs—Drs Keiller, Matthews Duncan, Wright, Pattison. Superintendent of Vaccination, Dr Husband. Visits daily at 2 P.M. Vaccination on Wednesdays and Saturdays at 12 noon.

NEW TOWN DISPENSARY. 7800 patients annually. Medical Officers—Drs J. Hunter, Dycer, Grainger Stewart, Joseph Bell, A. Dickson, John Duncan. Physician-Accoucheur—Dr Andrew Inglis. Superintendent of Vaccination, Dr J. Hunter. Visits daily at 2 P.M. Vaccination on Tuesdays and Fridays from 12 to 1.

ROYAL ASYLUM FOR THE INSANE. About 660 patients. Physician, Dr Skae. Lectures and Clinical Visits in summer.

EYE INFIRMARY, George Street. Surgeons—Benjamin Bell, Esq., F.R.C.S., and Dr Watson, F.R.C.S. Consulting Surgeon, Dr Hamilton. Open daily at 1 P.M.

EYE DISPENSARY, Cockburn Street. 1150 patients annually. Surgeons—Mr Walker, Dr Wilson. Open Monday, Wednesday, and Friday, at 1 P.M.

EAR DISPENSARY, Cockburn Street. Dr T. Keith. Tuesdays at 12. Average, about 20 cases daily.

EAR DISPENSARY. Dr Jackson. Mondays and Fridays, 11 to 12.

DENTAL DISPENSARY, Cockburn Street. Consulting Surgeons—Professor Goodsir, Professor Spence. Consulting Surgeon-Dentist, Mr Nasmyth, F.R.C.S. Dental Surgeons—Dr John Smith, Dr Orphoot, Mr Hutchins, Dr Roberts, Dr Hogue. Daily, 9 to 10 A.M. Average number of patients 3500 per annum.

GLASGOW.

ROYAL INFIRMARY. 600 Beds. Visits daily at 8.30 A.M. Physicians—Drs Scott Orr, W. T. Gairdner, Leishman, Steven, and Perry. Physicians to out-patients—Drs M'Laren and James Stewart.

Surgeons—Drs J. Morton, G. Buchanan, Professor Lister, and Dr E. Watson. To out-patients—Drs Dewar and Macleod.

LOCK HOSPITAL. 47 beds. Medical Officers—Drs G. H. B. Macleod and D. Forbes.

LYING-IN HOSPITAL AND DISPENSARY. 24 Beds; in-patients 326, out-patients 353. Physicians—Drs J. G. Fleming, J. G. Wilson. House-Surgeon, Mr G. Gentle.

UNIVERSITY LYING-IN HOSPITAL AND DISPENSARY. In-patients about 750, out-patients about 2500. Physicians—Drs Pagan and Leishman. Assistant Physician, Dr S. Johnston Moore.

WESTERN PUBLIC DISPENSARY. Medical Officers—Drs Caughie, A. Wood Smith, J. Paton Watt, and John Barbour. Attendance daily.

ROYAL ASYLUM FOR THE INSANE. About 680 patients. Physician-Superintendent, Dr A. Macintosh.

EYE INFIRMARY. 24 Beds; 160 in-patients; 2497 out-patients annually. Consulting Surgeons—Drs Rainy and A. Anderson. Ordinary Surgeons—Drs W. Mackenzie, A. Anderson, W. Brown. Assistant Surgeon, Dr G. Rainy.

DISPENSARY FOR SKIN DISEASES. 1147 patients last year. Physician—Dr M'Call Anderson. Practical Courses in Diseases of the Skin and Ear are held during the Winter and Summer Sessions. The Dispensary is open on Mondays and Fridays at 2 P.M.

ABERDEEN.

ROYAL INFIRMARY. Upwards of 280 beds. Visits daily at 12 o'clock. Consulting Physicians—Drs Dyce and Kilgour. Physicians—Drs Harvey, Smith, and Keith.

Surgeons—Messrs Keith, Pirrie, Kerr, Fiddes. Ophthalmic Surgeon, Dr Wolfe. Pathologist, Dr Beveridge. Dental Surgeon, Mr Williamson.

GENERAL DISPENSARY, LYING-IN, AND VACCINE INSTITUTION. Upwards of 6000 patients annually. Medical Officers—Drs Forsyth, Sutherland, and Christie; Messrs Smith, Paterson, and Fraser. Visits daily at 9.30 A.M. Vaccination every Wednesday at 3 P.M.

LUNATIC ASYLUM. Above 300 patients. Consulting Physician, Dr Macrobin. Resident Physician, Dr Robert Jamieson. Clinical Lectures in summer.

OPHTHALMIC INSTITUTION. 500 patients. Surgeon, Dr Cadenhead.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

REGULATIONS REGARDING THE FELLOWSHIP AND MEMBERSHIP OF THE COLLEGE.

I. *Of the Fellowship.*

1. No one shall be elected a Fellow of the College until he has been at least one year a Member thereof, and has attained the age of twenty-five years.

2. Every motion for the election of a Fellow shall be made at a quarterly meeting of Fellows by one of the Fellows present, and seconded by another; and this motion shall be determined by ballot at the next quarterly meeting of Fellows,—a majority of three-fourths being necessary to carry it in the affirmative.

3. If an urgent reason satisfactory to the Council be assigned, a Candidate may be proposed at an extraordinary meeting of the Fellows summoned for the purpose, and his petition may be balloted for at an extraordinary meeting of the Fellows specially summoned for the purpose; provided that the holding of this special meeting be agreed to by a majority of five-sixths of the Fellows present at the meeting at which the Candidate was proposed: provided also that not less than one week intervene between the two meetings, and that due notice of the intended ballot be given in the billets summoning the second meeting. The Candidate shall in this case pay to the Treasurer a sum of ten guineas in addition to the ordinary fees.

4. Every Fellow resident within five miles from the General Post-Office of Edinburgh shall, on his election, have his name placed on the roll of attendance, and shall pay the annual contribution, and be subject to all the laws of the College regarding fines. Fellows resident beyond five miles shall have the option of having their names on the roll of attendance or not; but if their names be on the roll of attendance, they shall pay the annual contribution, and be subject to fines.

5. Any Fellow may petition that his name be taken off the roll of attendance; which petition shall be determined by ballot at next quarterly meeting.

6. Any Fellow whose name is not on the roll of attendance may have it inserted by giving notice to the Secretary, who shall report to the next quarterly meeting; after which, the Fellow shall be entitled to all the privileges of the Fellowship, and may take his seat at the first meeting of the College.

7. Any Fellow leaving Edinburgh for a length of time, and omitting to petition to have his name taken off the roll of attendance, or wishing the same to be continued on it during his absence, shall be charged with his annual contribution and fines.

8. Fellows whose names are not on the roll of attendance shall not have the use of the library and reading-room, except in the cases specified in Laws 9 and 10.

9. Fellows whose names are not on the roll of attendance, on coming to reside in Edinburgh, or within five miles thereof, for a period not exceeding six months, may, with consent of the Council, be allowed the use of the library and reading-room.

10. Fellows not on the roll of attendance, who reside permanently in Edinburgh, or within five miles thereof, but are not engaged in practice, may, with consent of the Council, be allowed the use of the library and reading-room on payment of the annual contribution.

II. *Of the Membership.*

1. Any Licentiate of a College of Physicians, or Graduate of a British or Irish University, with whose knowledge of medical and general science the College may be satisfied, may be admitted a Member of the College, provided he shall have attained the age of twenty-four years.

2. Every motion for the election of a Member shall be made at a quarterly meeting of Fellows by one of the Fellows present, and seconded by another; and this motion shall be determined by ballot at the next quarterly meeting,—a majority of three-fourths being necessary to carry it in the affirmative.

3. Every Member on the roll of attendance, whose address has been communicated to the Clerk, shall be summoned to attend all meetings of the Fellows and Members.

III. *Of the Fees.*

1. The fee to be paid by a Member shall be thirty guineas.

2. When a Licentiate shall be raised to the rank of Member, he shall pay twenty guineas.

3. When a Member shall be raised to the rank of Fellow, he shall pay thirty guineas, exclusive of stamp-duty. The stamp-duty on the Fellowship payable to Government is £25.

4. All Candidates for Fellowship or Membership must lodge their Fees, and the amount of stamp-duty payable at the time to Government, with the Treasurer, previously to presenting their petitions.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

ABSTRACT OF REGULATIONS FOR THE FELLOWSHIP.

1. No person shall be received as a candidate for the Fellowship who is not in possession of the diploma of the Royal College of Surgeons of Edinburgh, or of the Royal College of Surgeons of England, or of the Royal College of Surgeons of Ireland, or of the Faculty of Physicians and Surgeons of Glasgow.

2. No person shall be admitted as a Fellow who is under twenty-five years of age.

3. Every candidate for the Fellowship shall lodge with the President a petition for admission, and shall be recommended by two Fellows as proposer and seconder, of whom one at least shall be resident in Edinburgh.

4. Candidates for the Fellowship shall pay £25 to the College funds, including all fees. The money shall be payable to the Treasurer immediately after the presentation of the petition to the College.

5. The billets calling the meeting at which the petition is to be presented, shall intimate the name and surgical qualification of the candidate, his professional appointments, if any, and the names of his proposer and seconder.

6. The petition shall be considered at a subsequent meeting, to be held not earlier than a month after the first; and in the meantime, the petition, with the names of the proposer and the seconder, shall be hung up in the library; and the billets calling the second meeting shall contain an intimation in the same form as those of the first.

7. At the meeting for considering the petition of the candidate, the votes shall be given by ballot. Three-fourths of the votes are required to entitle the candidate to be admitted; and the number of those voting shall not be less than twenty.

FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.

ABSTRACT OF REGULATIONS FOR THE ELECTION AND ADMISSION OF FELLOWS.

1. A candidate for the Fellowship of the Faculty as a Physician must be a Doctor of Medicine of a University of the United Kingdom, or of a Foreign University recognised by the Faculty. A candidate for the Fellowship as a Surgeon must be a Licentiate of the Faculty, or a Fellow, Member, or Licentiate of one of the Royal Colleges of Surgeons of the United Kingdom.

2. A candidate must be proposed, in writing, by two Fellows, at an ordinary meeting of the Faculty. But no proposal shall be received until the candidate

shall have intimated, by letter, to the President, the medical or surgical qualification (as the case may be), in virtue of which he desires admission to the Fellowship. After having been proposed he shall submit to the Council all necessary evidence of his professional qualifications, and of his being of unexceptionable moral character.

3. A copy of the proposal shall be placed in the reading-room till the next ordinary meeting of the Faculty; when, the Council having reported as to his eligibility, and no reasonable ground for delay being shown, the Faculty shall determine, by a ballot, whether or not the candidate shall be admitted as a Fellow.

4. For the election of a Fellow, two-thirds of the votes given must be in favour of his admission. An excerpt of the minutes of the meeting, giving the result of the ballot, shall be sent by the Clerk of the Faculty to the candidate, who, if elected, shall, at the next meeting of the Faculty or of the Council thereof, be enrolled as a Fellow, upon making and subscribing the declaration required by the Faculty.

5. The entrance fee (to be deposited at the date of his proposal) shall be £50; but from this sum a Licentiate of the Faculty shall be entitled to a deduction of whatever amount he may have already paid for his diploma.

6. A candidate residing beyond five miles from the Faculty Hall, on being elected in the usual way, may, upon payment of £25 (subject in the case of a Licentiate of the Faculty to deduction of one-half of the license fee) be admitted a Fellow.

ARMY MEDICAL DEPARTMENT.

WHITEHALL YARD.

QUALIFICATIONS AND EXAMINATION OF CANDIDATES FOR COMMISSIONS IN THE ARMY MEDICAL SERVICE.

1. Every candidate desirous of presenting himself for admission to the Competitive Examination required for the Army Medical Service must be unmarried. He must produce a birth certificate from the District Registrar, or a certificate of baptism in which the date of birth is stated; or if neither of these can be obtained, an affidavit from one of the parents, or from some other near relative who can attest the date of birth, will be accepted. The certificate or affidavit must show that the candidate is not above twenty-eight nor under twenty-one years of age. He must also produce certificates of moral conduct and character, one of them from the parochial minister if possible.

2. The candidate must make a declaration that he labours under no mental or constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate. He must also attest his readiness to engage for general service immediately on being gazetted.

3. The candidate must possess a diploma in Surgery, or a license to practise it, as well as a degree in Medicine, or a license to practise it in Great Britain or Ireland.

4. Certificate of registration in accordance with the Medical Act of 1858, and certificate of character, must be lodged at the Army Medical Department for examination and registry, at least one week before the candidate appears for examination. The certificate of age must accompany this form when filled up and returned.

5. On producing the foregoing qualifications the candidate will be examined by the Examining Board in the following subjects :—Anatomy and Physiology; Surgery; Medicine, including Therapeutics, the Diseases of Women and Children, Chemistry and Pharmacy, and a practical knowledge of drugs. (The examination in Medicine and Surgery will be in part practical, and will include

operations on the dead body, the application of surgical apparatus, and the examination of medical and surgical patients at the bedside.

The eligibility of each candidate for the Army Medical Service will be determined by the result of the examinations in these subjects only.

Candidates who desire it will be examined in Comparative Anatomy, Zoology, and Botany, with special reference to Materia Medica, and the number of marks gained in these subjects will be added to the total number of marks obtained in the obligatory part of the examination by candidates who shall have been found qualified for admission, and whose position on the list of successful competitors will thus be improved in proportion to their knowledge of these branches of science. The subjects for this part of the examination will be taken from the following books:—"Animal Kingdom," by W. S. Dallas, F.L.S. "Outlines of the Structure and Functions of the Animal Kingdom," by Rymer Jones; or "Cours Elémentaire d'Histoire Naturelle," par Milne Edwards. Lindley's "School Botany;" Lindley's "Medical and Economic Botany;" Henfrey's "Elementary Course of Botany." Candidates who may desire it may also be examined in the Elements of Physics and in Physical Geography. The following books are recommended for this purpose:—"Elements of Natural Philosophy," by Golding Bird and C. Brooke. "Physical Geography," by Mrs Somerville.

6. The examiners in London shall prepare a list in order of merit, with the marks affixed in the different subjects, to be transmitted to the Director-General, and communicated to the professors of the Army Medical School. If any candidate is found to be deficient in any particular subject, this shall be stated, in order that he may receive special instruction on the point at Netley.

7. After passing his preliminary examination, every candidate will be required to attend one entire course of practical instruction at the Army Medical School, before being admitted to his examination for a commission, on Hygiene, Clinical and Military Medicine, Clinical and Military Surgery, Pathology of Diseases and Injuries incident to Military Service. These courses to be of not less than four months' duration.

8. At their conclusion the candidate will be required to pass an examination on the subjects taught in the School. The examination will be conducted by the professors of the School. The Director-General, or any Medical officer deputed by him, may be present and take part in the examination. If the candidate give satisfactory evidence of being qualified for the practical duties of an army medical officer, he will be eligible for a commission as assistant-surgeon.

9. During the period of his residence at the Army Medical School, each candidate will receive an allowance of 5s. per diem with quarters, or 7s. per diem without quarters, to cover all costs of maintenance, and he will be required to provide himself with uniform (viz., the regulation undress uniform of an assistant-surgeon, but without the sword).

10. All candidates will be required to conform to such rules of discipline as the senate may, from time to time, enact.

ARMY MEDICAL SCHOOL.

ROYAL VICTORIA HOSPITAL, NETLEY.

All gentlemen who have been successful in the Competitive Examination, held twice a-year (February and August), at Chelsea, for appointments in the Medical Service of the Army, attend subsequently, at the Royal Victoria Hospital, a course of practical instruction in the duties they will have to perform in the Army. The course lasts four months, after which an examination is held to ascertain the progress made by each candidate. The lectures on Military Surgery include gunshot and other wounds; arrangements for the transport of wounded; duties of army surgeons in the field, during sieges, on transports, etc.; and other special subjects. Those on Military Medicine refer to the tropical and other diseases of the British possessions and colonies, and to the losses, by disease in peace and war at home and abroad. The lectures on Hygiene comprise all duties relating to the examination of water, air, food, clothing, etc., of the soldier; his duties and exercise, and the circumstances affecting his health; the subjects of meteorology, statistics, and prevention of the principal diseases met with in the Army, on home or foreign service. The lectures on Pathology have reference chiefly to the scientific examination of tropical diseases, and of other complaints which the army-surgeon is especially called on to investigate. The candidates also attend the wards of the hospital to study the diseases of invalids under the Professors of Medicine and Surgery, the system of recruiting, and the modes of keeping the army medical returns and records. They are also called on to make post-mortem examinations, to operate on the dead body, and pass through courses of practical instruction in the laboratory on the modes of recognising the qualities and adulterations of food, and in the microscopic room on the modes of microscopic examination of morbid tissues and of adulterations of food, etc.

NAVY MEDICAL DEPARTMENT.

ADMIRALTY, SOMERSET HOUSE.

REGULATIONS FOR CANDIDATES FOR THE OFFICE OF ASSISTANT-SURGEON IN THE ROYAL NAVY.

A candidate for entry into the Royal Navy shall make a written application to that effect, addressed to the Secretary of the Admiralty; on the receipt of which application he will be furnished with the regulations and a printed form, to be filled up by him, to show if he possesses the required qualifications.

As vacancies occur, the number of candidates required will be ordered to attend at the Admiralty Office, bringing with them the requisite certificates, showing that they are fully qualified by age, professional ability, etc., when they will be examined by a board of medical officers, to be named by their Lordships.

That no person be admitted as an Assistant-Surgeon in the Royal Navy who shall not produce a certificate of being registered under the Medical Act, and a diploma from one of the Royal Colleges of Surgeons of England, Edinburgh, or Dublin, from the Faculty of Physicians and Surgeons of Glasgow, from Trinity College, Dublin, or from other corporate body legally entitled to grant a diploma in Surgery; nor as a Surgeon unless he shall produce a certificate from one of the said colleges, faculty, or corporate body, founded on an examination to be passed subsequent to his appointment of Assistant-Surgeon as to his fitness for the situation of Surgeon in the Navy; and in every case the person producing such diploma and certificate shall also undergo a further examination, touching his qualifications in all the necessary branches and points of Medicine and Surgery, both at the time of his entry and after serving three years to render himself eligible for Surgeon; and that previously to the admission of Assistant-Surgeons into the Navy, it will be required that they produce proof of having received a preliminary classical education, and that they possess, in particular, a competent knowledge of Latin; also,

That they are of good moral character; the certificate of which must be signed by the clergyman of the parish, or by a magistrate of the district.

That they have served an apprenticeship, or have been engaged for not less than six months in Practical Pharmacy.

That their age be not less than twenty years, or more than twenty-six years.

That they have actually attended a recognised Hospital for eighteen months subsequently to the age of eighteen, in which Hospital the average number of atients is not less than one hundred.

That they have been engaged in actual dissections of the human body twelve months, the certificate of which from the teacher must state the number of subjects or parts dissected by the candidate.

That they have attended Lectures, etc., on the following subjects, at established schools of eminence, by Physicians or Surgeons of the recognised Colleges of Physicians and Surgeons in the United Kingdom, for periods not less than hereunder stated; observing, however, that such Lectures will not be admitted if the teacher shall lecture on more than one branch of science, or if the Lectures on Anatomy, Surgery, and Medicine be not attended during Winter Sessions of six months each:—Anatomy 18 months; or General Anatomy 12 months, and Comparative Anatomy 6 months. General Surgery 12 months, or Military Surgery 6 months, and General Surgery 6 months. Theory of Medicine 6 months, Practice of Medicine 6 months; if the Lectures on the Theory and Practice of Medicine be given in conjunction, then the period required is 12 months. Clinical Lectures (at an Hospital as above) 12 months; on the Practice of Medicine 6 months, on the Practice of Surgery 6 months. Chemistry 6 months; or Lectures on Chemistry 3 months, and Practical Chemistry 3 months. Materia Medica 6 months. Midwifery 6 months, accompanied by certificates stating the number of Midwifery cases personally attended. Botany 3 months.

A favourable consideration will be given to candidates who have obtained the degree of M.D. at either of the Universities of Oxford, Cambridge, Edinburgh, Dublin, Glasgow, London, or Aberdeen; or who, by possessing a knowledge of the diseases of the eye, and of any branch of science connected with the profession, such as Medical Jurisprudence, Natural History, Natural Philosophy, etc., appear to be more peculiarly eligible for admission into the service.

By the rules of the service, no Assistant-Surgeon can be promoted to the rank of Surgeon until he shall have served five years (two years of which must be in a ship actually employed at sea), and can produce a certificate from one of the before-mentioned colleges, faculty, or corporate body; and it is resolved that not any certificate of examination from any of the aforesaid institutions shall be admitted toward the qualification for Surgeon, unless the certificate shall be obtained on an examination passed after a period of not less than three years' actual service; observing, that no one can be admitted to an examination for Surgeon, unless, as hereinbefore mentioned, he can produce a certificate, together with the most satisfactory proof, that he has performed, on the dead body, under the superintendence of a professor or teacher of known eminence, all the capital operations of Surgery, and is perfectly competent to perform any operation with skill and dexterity, and thoroughly acquainted with the anatomy of the parts involved in such operation; without which qualification no one hereafter can be promoted to the higher branches of the service; and whenever Assistant-Surgeons already in the service (whose professional education may not be in accordance with the above) obtain leave to study previously to their passing for Surgeon, they will be required, on their examination, to produce testimonials of their having availed themselves of the period of leave to complete their education agreeably to these regulations generally.

Part Second.

REVIEWS.

A Handy-Book of Ophthalmic Surgery for the use of Practitioners. By JOHN Z. LAURENCE, F.R.C.S. (M.B. Univ. Lond.), Surgeon to the Ophthalmic Hospital, Southwark, etc. etc.; and ROBERT C. MOON, House-Surgeon to the Ophthalmic Hospital, Southwark. Cr. 8vo, pp. 160. Robert Hardwicke, London: 1866.

Recent Advances in Ophthalmic Science. The Boylston Prize Essay for 1865. By HENRY W. WILLIAMS, M.D., Ophthalmic Surgeon to the City Hospital, Boston, etc., etc. Pp. 162, illustrated. Ticknor and Fields, Boston: 1866.

Defects of Sight and Hearing; their Nature, Causes, Prevention, and General Management. By T. WHARTON JONES, F.R.S., F.R.C.S., etc. Fcp. 8vo. pp. 168. John Churchill and Sons, London: 1866.

THE immense progress which has been made during the last twenty years in the recognition and treatment of diseases of the eyes has caused a corresponding increase in the number of works on Ophthalmic Surgery. The revelations of the ophthalmoscope, the subject of increased intra-ocular pressure, and its treatment by iridectomy and paracentesis, and the wide subject of lesions of accommodation and refraction, each opens up fields of discussion requiring volumes for their full statement and exposition. Helmholtz, Liebreich, Graefé, and Donders, in their several spheres, have added so much to the science of ophthalmology, that now, instead of being a single branch of an ordinary surgical system, there is work in it for a man's whole strength. And yet, as most of us must occasionally treat diseases of the eyes, and still cannot devote a lifetime to their study, short simple treatises which may in plain terms give the substance of the larger works in a more accessible form, are very useful, and of late years have become very numerous.

1. The little work by Messrs Laurence and Moon is a very brief synopsis of the principles and practice of Modern Ophthalmic Surgery, for the use of busy practitioners, who may have neither time nor opportunity to read the innumerable contributions that ophthalmic surgery and science have received within the last fifteen years. It teaches how to recognise, and then how to treat disease, without entering much on either physiology or pathology. The descriptions are necessarily very brief, often, we suspect, too brief

to be available for any practical purpose to the inquiring busy practitioner; but if read carefully, they will communicate so much information as to make him wish for more, which the references to the standard monographs will enable him easily to gratify.

There are numerous woodcuts: those of instruments are fairly done, and may prove useful; the few illustrating disease, and specially ophthalmoscopic appearances, are not at all satisfactory. The work is got up in the usual excellent style of its enterprising publisher.

2. Dr Williams' prize essay must have been an exceedingly pleasant one to write, as it is a very easy one to read. It fulfils remarkably well the conditions of its title, telling in a brief practical style the chief improvements and additions to ophthalmic science within the last few years. It presupposes in the reader a competent knowledge of the ophthalmology of 1850, and then pleasantly and plainly brings him up to the level of 1866. While to German authors Dr Williams has to refer many of the advances in physiological optics, to English surgeons are due many of the more recent operative improvements, Bowman, Critchett, Streatfeild, and others, having associated their names with Corelysis, Iridesis, and the operations for epiphora and staphyloma. Dr Williams has suggested, and in several cases practised, an addition to the ordinary flap-extraction of cataract, which he regards as an improvement,—viz., the insertion of a fine suture to keep the flap in position. To quote his own words:—

> "I have done this in a considerable number of instances, and thus far with invariable success; and after careful observation of the results obtained, can advocate this method as possessing numerous and important advantages. I prefer a straight needle, only a quarter of an inch long, made by cutting off the requisite length from the head of the finest sewing needles, and forming a new point. The needle is held and passed through the cornea by means of a pair of firm forceps, and the suture, formed by a single strand of silk, or the finest silk thread, is tied, not too tightly. This is allowed to remain until it cuts itself out, which is sometimes not for several days, or even weeks, as there is danger of reopening the wound if its removal is attempted, unless during anæsthesia. From the usual intolerance of the cornea of the presence of foreign bodies, we might expect that the suture would give rise to much irritation, but such has not been the fact; as I have known it to remain *in situ* seven weeks without causing inconvenience."—Pp. 90, 91.

Dr Williams now adds his authority to the method of treating cases of syphilitic keratitis, and of choroiditis, by the mild use of mercurials, specially of the bichloride of mercury in small doses,—a testimony which is all the stronger from his well-known objection to the usual mercurial treatment of syphilitic iritis.

The essay is published in the very best style, with every accessory of paper and type; the diagrams are beautifully done, specially those illustrating optical phenomena, and the use of the ophthalmoscope. A very evident mistake in the misplacement of Figs. 3 and 4 can cause confusion only to a careless reader. A set of test types are added, similar in plan to those of Dr Snellen; the smaller ones are by no means so well printed as they might be, but the gradation is regular, and the larger ones are beautifully distinct.

3. This little work is one of a series of half-crown volumes called "Popular Medical Series." As commercial speculations they must be successful, from the number already taken in hand by their sagacious publisher, and from the eminence of some of the authors he has retained; as contributions to science they are valueless. Written apparently chiefly for the general public, Mr Jones has wisely confined his practical directions to those which belong rather to prevention than cure. The explanations of the physiology of vision, if not very exhaustive, are very simply told. The few pages devoted to the defects of hearing are of the very mildest description, and might have been written by any fairly intelligent monthly nurse.

On Diseases of the Veins, Hæmorrhoidal Tumours, and other Affections of the Rectum. Entirely re-written, by HENRY LEE, F.R.C.S., Surgeon to St George's Hospital, etc. Second Edition. 8vo, pp. 190. John Churchill and Sons, London: 1866.

THE two parts of which this work is composed are already in a separate form well known to the profession. The papers on Hæmorrhoids dating from 1848 and 1854, while the Diseases of the Veins was the Jacksonian prize essay for 1850. The present work (besides being entirely re-written, as we are told in the preface) is very much improved, the part on Diseases of the Veins being brought, so far as its pathology is concerned, up to the level of the present day, and thus is practically a new work.

The great changes which, from the researches of the German school of Pathologists, with Virchow at their head, have been introduced into the pathology of diseases of the veins have as yet left the subject in rather a transition state; many of our old notions having been shaken, while they have hardly yet been replaced.

Into this troubled sea Mr Lee introduces his reader, and if he does not succeed in smoothing his voyage out of it by the favouring breeze of a satisfying theory, he so far comforts the voyager by telling him where he is; showing him the rocks on which others have been wrecked, teaching him what shallows to avoid, what whirlpools have engulphed others. Leaving metaphor, Mr Lee endeavours fairly to define the present state of the question as to phlebitis, its origin and effects; and specially to trace the connexion, if there is one, which exists between phlebitis and that most dreaded scourge of hospitals, pyæmia. The author's own views of the nature of this connexion we will give in his own words.

> "We have long suspected the cause of pyæmial and septic diseases to be due to the generation and absorption of some one or more peculiar organic poisons, rather than to the introduction into the blood of some product arising

out of the ordinary decomposition of pus or other animal fluids; and that, when the poison is introduced into the system, the subsequent phenomena may then depend upon the presence or absence of a fit nidus or pabulum in the blood; and the experiments of Professor Panum on putrid infection would indicate that there exists a fixed, non-volatile, putrid poison, of a peculiarly indestructible character, which resembles, in the intensity of its action, the poison of serpents, curare, and vegetable alkaloids, and differs from all ferments by retaining its power after boiling and treatment with alcohol."

An excellent account of the changes in the blood and in the coats of the veins in phlebitis follows, and an interesting comparison of its effects with those of arteritis. On the subject of decomposition of the blood in living vessels, the experiments of Gaspard are detailed. A short analysis of the results of Dr Polli's (of Milan) experiments on the subject of pyæmia, etc., is there given; we extract the three principal deductions:—

"I. That the injection of a certain quantity of pus into the circulation produces pyæmia, and such diseases as are characterized by multiple abscesses.

II. That the injection of putrid matter produces septicæmia or those diseases recognised by the name of putrid infections, and characterized by a typhoid gastro-enteritis.

III. That the injection of matter obtained from contagious diseases—glanders, for instance—will reproduce the same affections."

The relation of osteo-myelitis to pyæmia is then noticed briefly, and three illustrative cases by Dr Marston added to those of Roux, Longmore, and Fayrer. A full account of the morbid appearances after death from pyæmia is then given. In cases where the subcutaneous veins are the ones affected, the author proposes to shut off the inflammatory poison (pus and debris) from the system, by his own operation of subcutaneous section. Four cases are given in which good effects seem to have resulted from this.

The operation is also used for the radical cure of varicose veins, and is more scientific in principle, and apparently more satisfactory in its results, than most of the previous plans for effecting obliteration.

"The operation is performed in the following manner:—The vein is taken up between the finger and thumb, which are made, as far as may be, to meet behind it. A needle is then passed behind the vein, and made to pass out as near the vein on the opposite side as possible. The vessel is then compressed by an india-rubber band, or a ligature passed over the end of the needle. This point of the operation is repeated in another part of the vein, about an inch distant. A portion of the vessel is thus isolated from the rest of the circulation. It may then be divided or removed without fear of any constitutional effects. Generally a simple subcutaneous division is all that is necessary. There is then no suppuration, no ulceration, and no open wound. The needles used for the purpose of acupressure are removed on the third or fourth day—the upper one generally a day before the lower one. All the parts usually become healed about the seventh or eighth day, and the divided veins are massed together in a knot, and permanently obliterated."

Regarding the much debated question as to the propriety of the so-called "radical operation" for varicose veins, two points are of pre-eminent importance:—1*st*, Is the operation a safe one? To this, Mr Lee's answer is, "This operation has been performed by the author, and, with some modifications, by various other surgeons a great number of times. So far as he knows, no serious symptoms have ever supervened, where due care has been taken that the sides of the vein should be brought together without being injured by the needles." 2*d*, Is the cure a permanent one? To this the answer can never be so certain, as many cases pass entirely from the cognizance of the operator. Mr Lee's experience is, that while some do not recur, others, after an interval of comparative comfort for the patient, become as bad as ever. Experience, we believe, will show, that under similar circumstances of hard work and neglect, the veins will soon be as bad after one operation as they were before, so that in hospital practice the results will be unsatisfactory, while in the cases of patients who can take care of themselves the operation will frequently improve or remove an already formed varicose cluster, and put it in the patient's power to prevent the appearance of a new one.

Under the head Varicocele the same method of treatment is recommended and its results extolled. Cases are given in which, after the operation, the testicle which had been in a state of atrophy regained its former size.

The latter half of the book on Hæmorrhoids and other affections of the rectum gives a brief practical account of the various maladies to which that unlucky region is liable.

In St George's Hospital, where so many of the indolent, over-fed cooks and butlers of the West End of London are treated, the author has a large field on which to study diseases of the rectum; but the subject has been so thoroughly worked out already, that there is not much room for originality of description. With some points in the treatment we cannot agree, specially the author's preference for the use of actual or potential caustics for the removal of internal piles, to the ligature, which, here at least, has been found so safe and so satisfactory. The last chapter, on some restorative operations connected with the rectum is a useful one, as treating of certain procedures generally left in the hands of obstetric surgeons, but which are quite in place here.

We have no doubt that this sensible practical work will meet with the reception it deserves from the profession.

On Hip-joint Disease, with Reference especially to Treatment, by Mechanical Means, for the Relief of Contraction and Deformity of the affected Limb. By WILLIAM CURTIS HUGMAN, F.R.C.S., late Surgeon to the Hospital for Deformities, London. Second Edition: cr. 8vo, pp.95. John Churchill and Sons, London: 1866.

SMALL though it be, this work contains much that is quite foreign to the subject on its title-page; and of what remains, little is original, and what is borrowed is by no means well arranged.

Under the pathology of hip disease, we have long quotations from the well-known works of Brodie, Liston, and Fergusson; and the hackneyed opinion of Aston Key on the ligamentum teres. Under the head of treatment we are indulged with longer quotations on the virtues of proteine, and the value, modus operandi, and tests for the purity, of cod-liver oil. The specialty in the author's treatment seems to be, the use of a prone couch, on which the patient lies, with the affected limb firmly fixed in a semiflexed posture. The remarks on the absolute necessity for perfect rest of the limb are excellent, and some of the cases recorded are certainly very remarkable for their success. Counter-extension of the shortened limb by weights is recommended, and quotations are given from the work of Dr Heine of Cannstadt, detailing cures of cases of spontaneous dislocation of the head of the femur, by counter-extension for a year at a time. *Credat Judæus!*

Part Third.

MEDICAL NEWS.

BRITISH MEDICAL ASSOCIATION.

The Annual Meeting of this Association was held at Chester on the 7th, 8th, 9th, and 10th of August, Dr Waters of Chester in the chair. The address in Medicine was delivered by Dr Bennett.

THE ADDRESS IN MEDICINE.

By John Hughes Bennett, Professor of the Institutes of Medicine, and Senior Professor of Clinical Medicine in the University of Edinburgh.

Gentlemen,—In discoursing before such an audience as I have now the honour to address, on the Science and Art of Medicine, nothing would be more gratifying for me than to dwell on the unquestionable benefits which mankind has derived from the practice of the healing art—praise and hold up for imitation the great men whose genius and labours have assisted its progress—describe the improvements which have been made in recent times—expatiate upon some doctrine which, at the present moment, strongly excites attention—or repel the covert sneers or open attacks which have been made upon its dignity, honour, or utility. Able addresses of this kind, however, have been so frequently brought before you; the names of Harvey, Hunter, Jenner, and Bell, have done such good service; graphic illustration, sound reasoning, and vivid eloquence have been so well and forcibly employed on these topics, that I trust you will forgive me if, on this occasion, I venture to regard the future rather than the past; and, while admitting that much has been done, contend that more remains to be accomplished. I propose, then, to inquire, from the present aspect of medicine, theoretical and practical, how we can best assist its onward progress, and establish more firmly its claim to scientific eminence and public confidence.

And here allow me to observe that my position as a teacher of Physiology in the University of Edinburgh obliges me to review annually the incessant labours of the histologists, naturalists, chemists, physicists, physiologists, and pathologists, who are seeking to determine the laws which regulate vitality in all its phases. From such a survey, it is now manifest that the theory of medicine during the last twenty-five years has been completely changed; that most of the principles which governed its practice as an art are no longer applicable, and that during this period our science has advanced with such astonishing rapidity as to have imposed upon those who kept pace with its progress a task of no ordinary difficulty and labour.

On the other hand, as a physician in active practice, and as a Professor of Clinical Medicine engaged in teaching the art at the bedside, I am surprised at the indifference with which this great advancement in the science is regarded by the majority of medical men. I see an army of practitioners scattered over the country, without organization or central government, engaged in efforts to cure disease and alleviate suffering. In this they are mainly guided by a knowledge, partly traditional, partly acquired by themselves, called experience, which is not only often opposed to the exact observations and careful inquiries of modern times, but is too frequently most contradictory in itself. The greatest differences consequently prevail among intelligent medical men as to the best methods of treating many important diseases; theory and practice—advanced science and past authority—scepticism and blind faith—often being arrayed against each other.

What, then, seems to me desirable in the actual condition of medicine is to bring the scientific and practical departments of the profession into harmony with one another, and to produce such co-operation among practitioners that their methods of treatment should assume more of a fixed and uniform character. To assist us in arriving at this end, I propose shortly to describe what seems to me the actual stand-point or condition of Medicine, both as a science and as an art; and, in doing so, point out how one necessarily influences the other. I shall then consider how far, by greater union among its cultivators than has hitherto prevailed, professional advancement may be best secured.

1. It must be admitted that the Descriptive Anatomy of the human body is perfect—a fact in itself of the highest importance in the consideration of medicine as a science. It is in determining its ultimate structure, by means of magnifying instruments, that the greatest progress has been made in recent times; and it is now determined that vital phenomena are essentially dependent on the minutest particles of which every tissue consists. The organs and textures, in fact, are but aggregations of fine molecules, an acquaintance with the properties of each of which can alone lead us to a knowledge of the whole. All attempts to restrict vital action to a cell, to a nucleus, or to any particular element of structure, appears to me to be opposed by an overwhelming series of facts; the truth being, that growth, contractility, and spontaneous movement are as capable of being demonstrated in molecular vibrio one twenty-thousandth of an inch in diameter, as in the largest cell or muscular fibre. Neither is vital action confined to a so-called molecular or germinal mass, but may exist in perfectly hyaline intercellular substance, as in cartilage, where those changes primarily occur that transform it into bone. It follows that those views whereby, according to some, organic matter is always evolved from within, while, according to others, it is always superimposed from without, are too exclusive, Nature sometimes acting in one way and sometimes in another,—here within, and there external to cells.

So far, then, as our present magnifying instruments will allow us to judge, the ultimate structure of a living body is composed of molecules. These possess independent physical and vital properties, which enable them to unite and arrange themselves so as to produce higher forms. In this way nuclei, cells, fibres, tubes, and membranes are produced, the union of which in their turn constitutes the various tissues and organs of the body. Not unfrequently the breaking down of one substance is the necessary step to the production of another; so that, either directly or in solution, the histolytic or disintegrative molecules of one period may become the histogenetic or formative molecules of another. This theory of organization not only reconciles the conflicting views of those who still found their notions of development upon the powers of a cell, of a nucleus, or of intercellular substance, but seems to me consistent with all the known facts yet discovered in the organic world.

As an illustration of this process, we can trace with tolerable accuracy the structural history of food as it passes into, through, and out of the body. Thus, an organic mass—say a piece of bread or a beefsteak—first undergoes the histolytic process of disintegration, partly by the mechanical action of the teeth, stomach, and intestines, and partly by the solvent action of the salivary, gastric, and other juices, until it is reduced by a molecular pulp called chyme. From this pulp a fluid is prepared, which, passing through the villi, enters the chyle-ducts, and in the lymph-glands and thoracic duct, by a histogenetic or formative action produces the blood-corpuscles. These become coloured in the lungs, circulate for a time, and in their turn undergo histolytic solution, and thereby serve to elaborate the liquor sanguinis. This viscous fluid, drawn out through the capillaries, supplies the various tissues, molecule by molecule, with the histogenetic or constant formative material which keeps up their substance. Such substance having served its purpose, is constantly undergoing a histolytic or disintegrative process—is again reduced to a finely molecular fluid, and once more joins the liquor sanguinis of the blood. From this it is finally removed through various channels by the process of secretion and excretion, which in their turn only present still further evidence of this law of molecular organization. Thus the bread or beefsteak, having entered the frame, may be shown structurally to have undergone successive histogenetic and histolytic changes, enjoyed, as it were, life for a time, and ultimately been discarded as inert or dead matter. Compositions and decompositions, however, are not only structural but chemical, and to these we must next pay attention.

2. The great impulse communicated to Animal Chemistry in recent times dates from the labours of those who, by careful analysis, have followed the chemical transformations which plants and animals undergo during their development, growth, and decay. These have shown the relations which exist between the atmosphere, the soil, and the plant—what the latter takes from the two former, and what it gives to the animal who feeds upon it. In the same manner that plants can only grow in those soils which contain the substances necessary to form their tissues, so animals can only be nourished upon those compounds which contain the chemical elements they themselves require. All this being ascertained, what next interests us is the relation which exists between the supply of food and waste of the tissues during their exercise.

Viewed chemically, food may be regarded as a mixture of albumen, fat, and mineral matter, all of which pervade the economy, although the first is most abundant in the fibrous tissues, the second in the adipose and gland tissues, and the third in the bones and teeth. These substances, prepared by the molecular disintegrative process formerly alluded to, are but little changed chemically before passing into the tissues. But in leaving them in order to be excreted, remarkable chemical combinations and decompositions occur, whereby they produce different compounds, such as carbonic acid, water, urea, numerous organic salts, and so on. The nature of these chemical actions within the body is not yet fully understood; so that, although we know the composition of the ingesta and egesta, how the one is transformed into the other by the animal is not so clear.

The view put forth by Liebig—namely, that food should be regarded as nitrogenous and non-nitrogenous—the former being sanguigenous or flesh-forming, and the latter respiratory or heat-giving—has long appeared to me erroneous on histological grounds. Every tissue requires both principles. Even chemists themselves have shown by experiment that the idea of the tissues being oxydised during action, and yielding a proportionate degree of refuse like a steam-engine, is not correct. Recently, Messrs Fick and Wislicenus of Zurich went to the summit of the Faulhorn, one of the Swiss alpine peaks,—an ascent which occupied eight hours. During this period, as well as for eighteen hours previously, and for six hours subsequently, they only ate hydro-carbonaceous food, yet a chemical analysis of all the renal secretion passed showed that during and shortly after the ascent the urea excreted was only slightly increased. These facts are irreconcilable with the prevailing chemical theory; for, had muscular exertion increased the oxydation of albuminous material, urea should have been largely augmented, but it was not so; muscular energy in this experiment having been carried on, without fatigue, at the expense of the carbonaceous substance of the tissue.

Indeed, numerous observations now being prosecuted prove that much has to be accomplished before the chemistry of food becomes the physiology of food, and before the slice of bread or beefsteak can be traced in its progress through the body with the same exactitude chemically as it has been structurally. Even when this is accomplished, we shall have much to learn which chemistry cannot teach us; for, as has been pithily observed, although in the laboratory a pound of flesh is enormously superior in nutritive power to a pound of cabbage, yet, to a rabbit the cabbage is the superior food, whilst to a dog the cabbage is no food at all (Lewes, p. 115). It follows that, though chemistry can teach us much, nutrition, like all other vital processes, can only be rightly studied by the physiologist.

3. The researches of naturalists, it is now admitted, have thrown much light on the Laws of Germination and Reproduction, and have demonstrated to us the nature of several obscure diseases. The observations of Bassi as to the cause of death in certain epidemics affecting the silkworm led to the discovery of the vegetable parasites causing favus, pityriasis, mentagra, and other diseases of man; while the observations of Sars, Von Siebold, Steenstrup, and others, have determined the laws which govern the production of animal parasites. These in turn are related to several interesting facts and generalizations, all of which have tended to augment our knowledge of the animal economy. Need I allude to the doctrine of alternate generation by Steenstrup, of parthenogenesis by Owen, of the origin of tapeworm by Von Siebold, of the enconomy of the hive by Dzierzon, of pisciculture by Coste, of the formation of the coral reefs and islands of Florida by Agassiz, and the origin of species by Darwin—all of them noble examples of physiological generalization, several of which have already found important practical applications, while not a few have been of direct service to medicine.

4. A study of Natural Philosophy has led in recent times, perhaps more than that of any other branch of science, to an elucidation of the functions of living beings. What are physical and what are vital actions has long been a subject of discussion. The attraction which the sun exerts upon the earth, that which the earth has upon the magnetic needle, and that which one chemical substance has for another, though differing entirely in their nature, are called physical; but the attraction which the intercellular substance of cartilage exerts upon the lime-salts dissolved in the blood, or that by which any other tissue selects and draws from the liquor sanguinis what enters into its substance, is called vital. Again, the conduction of electricity along a wire is physical; the conduction of nervous influence along a nerve is vital. We know nothing of the nature of any of these actions, which constitute ultimate facts in science; but, inasmuch as they are not identical, we call those which occur in living beings vital. Some of these are altogether peculiar,—such as growth in particular directions, muscular contractility, nervous excitability, and mental acts. We observe, however, in a living being, that these properties are more or less dependent upon, mixed up with, and give direction to physical properties. It is the determination of what is due to the one class of phenomena and what to the other, as well as their mutual relations, that has for some time engaged the attention of what is called the physical school of physiology.

And here it must be confessed that, just in proportion as the physical have been made to encroach upon what were supposed to be vital actions, our knowledge has advanced. It has now been proved that much of what was mysterious must be considered due to gravity, imbibition, endosmose, or chemical, electrical, and mechanical operations. Now, as the laws regulating these physical forces are better known to us than such as govern the vital ones, not only in this way can we comprehend them better, but, when required to modify them by art, we are enabled to do so with more effect. We cannot, therefore, too strenuously urge forward all that physical research can do for us, although still conscious that, while in this way we may learn much, physics, no more than chemistry, will ever wholly clear up the mysteries which surround the great fact of life.

It is curious, however, to observe that while chemistry has succeeded in manufacturing in the laboratory many of the excretory products of the body—such as urea, taurine, allantoin, formic, oxalic, lactic, butyric, and other organic acids; so the histologist, by the mechanical union of oil, albumen, and mineral matter, has succeeded in forming artificial molecules, nuclei, cells, membranes, and concretions, very similar to what we find in the animal. True, in both cases we must take the proximate principles, which can only be formed by nature; but, these given, we learn much of the structural mode of formation and of the chemical decompositions occurring in the animal from what physical experiment has taught us.

Of the numerous ingenious instruments now invented, which have enabled us to determine with rigorous exactitude the time, area, and intensity of phenomena in the living body, whether applied to the velocity of the circulation, force of the pulse, production of electrical currents, rapidity of the nerve-force altered, curves of the crystalline lens, and many other most important facts, I have no time to speak. I have requested my assistant, Dr Rutherford, to bring with him to this meeting the very ingenious myographion of Du Bois Reymond, with which he will show, what may prove interesting to many present, how the rapidity of the nerve-current can be accurately determined. The inspection of such an instrument, an idea of its construction, and the witnessing of one of the experiments which have given such reputation to the name of Helmholtz, will do more than any feeble description of mine to convince you of the great talents and ingenuity of those who now prosecute our science in this direction.

5. Experiments upon the lower animals, I need scarcely say, have added largely to our knowledge of the vital functions. On the propriety of this kind of research I agree with what was stated by Dr Sharpey in the able address which he read to this Association in 1862; viz., that, "when we consider the countless myriads of the brute creation that are daily slaughtered for man's sustenance, or are left to perish from hunger or the severity of season, or fall a prey to their natural enemies, to say nothing of the multitudes killed for sport, surely it is not too much to claim that an infinitesimal share of this vast sacrifice be applied towards the extension of human knowledge and the alleviation of human suffering." It is unnecessary, however, to dwell upon the brilliant results which have been derived from this method of investigation. I would only point out, that a reluctance to engage in it when necessary has vitiated the most important conclusions, of which we have an excellent example in the ideas formed by Sir Charles Bell as to the functions of the anterior and posterior columns of the spinal cord. Having cut the anterior and posterior roots of the spinal nerves in a living animal, and shown that thereby voluntary motion and sensation connected with the parts which received nerves from them were paralyzed, he supposed that the columns of the cord were continuations of these roots, and that section of them would also destroy motion and sensation. But when Brown-Séquard cut across the posterior columns in a living animal, which he did with a knife made for the purpose, it was found that, so far from sensation being prevented, pressure on the leg of the animal gave rise to increased pain. The cause of this is now thoroughly understood from the admirable histological researches of Mr Lockhart Clarke, who has demonstrated, among numerous important facts for which

science is his debtor, that the nerve-tubes of the spinal roots, instead of turning up towards the brain, as had been generally supposed, pass directly inwards to the grey matter, and are there so distributed that no single section of those columns can destroy their power of conducting influences to the brain. Indeed, experimental and histological research have been so well combined in recent times as to throw a flood of light over the functions of the nervous system. In proof of this, I need only refer to the labours of Bernard as to the influence of the vaso-motor nerves over animal heat.

6. Lastly, the pathologists, who seek to discover, from an inspection of diseased organs after death, the relations existing between morbid conditions and the symptoms or phenomena they occasion during life, have also added largely to the science of medicine. In the same manner that the healthy body has been explored to obtain a knowledge of its structure, so has the diseased body been scrutinized to ascertain the changes produced. As the descriptive anatomy of man is perfect, so is his morbid anatomy; and pathological is as far advanced as physiological histology. Indeed, they may be said to constitute one science. If the organic chemistry of the healthy processes is imperfect, the pathological chemistry of the body is still more so, the latter necessarily being dependent on the former. Such, however, is the activity with which morbid phenomena have been investigated during the last quarter of a century, that in no department of the science, probably, has greater progress been effected.

The meanings of the old terms, inflammation, tubercle, cancer, and so on, are still discussed; but the morbid processes themselves are now well known. These consist of congestion of the bloodvessels, and, as a result of this, serous effusion, exudation of the liquor sanguinis, or extravasation of blood. Each of these products undergoes subsequent changes, whereby they are again absorbed into the circulation, either directly, as in the case of serous effusion; or through cell growth, as in the case of exudation; or by disintegration, as in the case of internal hæmorrhages. Not unfrequently morbid growths occur, which may originate from irritation of the existing textures, which they more or less resemble; or they may spring up in exudations giving rise to tubercle, pus, and cancer. The tissues also atrophy or degenerate, and in this last case may undergo the fatty, albuminous, pigmentary, or mineral transformations. Concretions of various kinds are deposited in cavities, and obstruct ducts, giving rise to formidable lesions. There may be animal and vegetable parasites. Lastly, the blood itself may undergo alterations from an excess or diminution of its structural or chemical constituents, or it may be contaminated by noxious poisons derived from without, or generated within the body.

A knowledge of these morbid states has now made great progress; and our general ideas of their nature have, in consequence, undergone a remarkable change. It has been shown that the same general laws which regulate growth and other vital functions in health, also influence them when so disordered as to constitute disease. The same theory of organization which has changed our views of physiological processes has had a similar influence on pathological ones. It is not so much the peccant humour or the vascular action of our forefathers to which we attribute structural effects, as it is to the altered chemical, electrical, or vital condition of the ultimate molecules of the tissues themselves. This being the organic cause of disease, our efforts are no longer engaged in the mere study of symptoms, and the grouping them together in accordance with artificial nosologies, but in endeavouring to determine with accuracy the character of the lesion itself, and the precise texture and organ which is involved.

Only a limited idea, however, can be formed of the position of scientific medicine from viewing what has been accomplished by these six methods of investigation separately. It is their union, the assistance that one gives to the other, and the necessity which exists for knowing them all, that require attention in founding a proper basis for medical education. So long as it was supposed that diseases were groups of external symptoms, and that the removal or alleviation of these was the great object to be attained, the rules of art flowing from past experience were easily acquired. But now that every practitioner is expected to ascertain the nature and seat of the morbid change, not only must these be previously understood, but he must be capable of using all those means whereby they can be detected. A knowledge, therefore, of certain sciences, and of the laws which regulate their course, and their relations with one another, has now become imperative as an introduction to practice.

This mutual relation of the sciences has led to generalizations of the highest importance to our knowledge of vital action both in health and disease. Thus, it having been shown by Grove that the various physical forces—such as heat, light, electricity, gravity, and chemical action—are all correlative, it soon became apparent not only that there was a similar relation between the vital forces—such as those governing growth, nutrition, contractility, and excitability—but also between these and the physical forces. It has further been shown that, just as matter is indestructible, only changing its condition, so is there a conservation of force which only alters its form. In the same manner that heat, light, electricity, gravity, and chemical action are capable of being perpetuated in an incessant round one to the other, so we must regard growth, contractility, sensibility, and even the exercise of the mind, as only varieties in form of that chemical force generated in nutrition, as this in its turn is only an altered manifestation of some other force.

It is by studies in this direction, and in this spirit, that we shall do most to advance the science of medicine, in proof of which I would for a moment refer to the assistance which the sciences referred to have given to one another in advancing our knowledge of disease, and its detection in the living body. How anatomy and physiology aid pathology, and how this in its turn confirms and extends physiology—of this we have an excellent example in the discovery of leucocythæmia, which has proved to us that the views of Hewson, which were so long neglected and held to be doubtful, as to the functions of the spleen and lymphatic glands, are correct. and that they do, as he maintained, form the corpuscles of the blood. Again, many alterations of texture, which morbid anatomy has made us acquainted with, would only have been suspected, but for the help which physical science has furnished in various ways; more especially by chemical tests and analyses, and numerous ingenious instruments. Need I refer to what we now accomplish by means of percussion and auscultation, and to the use of the microscope, speculum, laryngoscope, ophthalmoscope, sphygmograph, thermometer, etc.?

The present stand-point of scientific medicine, therefore, may, I think, be summed up as follows:—

1. That the descriptive anatomy of the human body is perfect, and has been thoroughly worked out.

2. That the structural and general anatomy of the human body is very nearly so.

3. That physiology, though greatly advanced, has yet much to teach us as to the functions of the human body, and is at this moment apparently waiting (1) for the organic chemists who are investigating the transformations which food undergoes in passing through the economy; and (2) for the physicists who, with newly invented and delicate instruments, are investigating the vital functions with a care and exactitude only recently arrived at.

4. That pathology has demonstrated to us the structural alterations produced by morbid states; but is still very deficient in a knowledge of the chemical alterations these occasion. It must necessarily be dependent, however, on the progress of physiology, so that the laws which regulate many diseased processes have yet to be ascertained.

5. That the diagnosis of diseases, owing to our combined knowledge of physiological and morbid states, and the cultivation of physical exploration in conjunction with observations of symptoms, is rapidly becoming more exact, and losing its conjectural character. What John Hunter effected for surgery by placing it on a scientific basis, is now the object of the well-informed physician with regard to the practice of medicine.

I now turn to the practical side of medicine, by which is to be understood an available knowledge of all these means which contribute, directly or indirectly, to the cure of disease, prolongation of life, or alleviation of suffering.

The long discussions that formerly occurred as to whether the practitioner should be guided by dogmatism or empiricism—theory or observation—deduction or induction—have lost their interest. There are more observers than reasoners, although it may be questioned whether a really perfect observation is not more rare than a sound theoretical conclusion. It is now recognised that science must prevail in the schools, practice at the bedside; and that the more we acquire of both, so much the clearer it is seen how good observation corrects and perfects theory, and how science improves and extends observation. Both have added largely to our resources. Thus it will be admitted that the doctrines of the circulation of the blood, of the independent functions of nerves, the reflex function of the spinal cord, cell-growth, and so on, have been directly serviceable in practice. It by no means follows, however, that great physiological discoveries are often immediately available in this way. The practical value of the discovery of Harvey was not recognised for several years after its publication; and the recently established doctrines of the functions of the pancreas and of the lymphatic glands, and of the glycogenic functions of the liver, have not taught us as yet how better to regulate digestion, influence the formation of the blood, or cure diabetes. But that every physiological truth adds largely to our conceptions of the correct treatment of maladies, is a proposition I must not occupy your time with attempting to demonstrate.

On the other hand, many of those remedies which have been proved to be directly curative of disease—such as quinine, sulphur-ointment, lemon-juice, cod-liver oil, and so on—are entirely the result of empirical observation. With regard to these, it is our constant aim to determine the *rationale* of their influence. Up to this moment, notwithstanding, there is an uncertainty about the action of numerous powerful drugs in daily use, which is a constant reproach to us, and which we should make a strong effort to remove. It cannot be correctly said, in face of the researches and additions constantly made to our knowledge, that we have been altogether supine on this subject. But it is unquestionable that no vigorous attempt is being made, nor does any organization, so far as I can perceive, hold out a prospect that any is likely to be made, of advancing our knowledge in this direction. In the excellent paper read at the annual meeting of the Association by Dr Handfield Jones, in 1862, the conflicting opinions which prevail with regard to the action of some of our most valuable drugs, more especially of digitalis, opium, and quinine, were pointed out. The settlement of these differences is certainly within the reach of scientific investigation, and all that is required are capable workers to solve the difficulties they present. Numerous other agents, however, might be mentioned, the power of which is great, though as yet we know little of their effects. Among these is electricity, the operation of which upon the nerves and muscles has recently been studied by the physical school to a great extent, without, as yet, furnishing us with any exact principles for its application. Duchenne and Remak, it is true, have made many valuable observations, but their views are much opposed to each other. The first considers that an interrupted current should be applied directly to the muscles, while the latter believes that a powerful continuous current sent along the nerves is most beneficial. This and many similar questions require to be solved by investigation.

There are few, however, I fear, who have clearly placed before themselves the great difficulty, labour, and sacrifice of time which therapeutical inquiries necessitate. Indeed, it may be questioned whether any one man, however talented, is capable of such investigation. The wisest among us is apt to be biassed by accidental circumstances. A case, or series of cases, which have done well under a particular management; the unexpected recovery of an apparently hopeless disease following the administration of a particular medicine; or the fascination which lingers about some plausible theory, may all tend to mislead. The influence of one mind should be corrected by that of another; and the best knowledge in all the departments of the science and art of medicine should be concentrated on the solution of the question proposed. A committee, therefore, would be requisite which should combine the skill of the anatomical operator, the analytical power of the chemist, and the varied knowledge, theoretical and practical, of the histologist, physiologist, physicist, pathologist, therapeutist, as well as of the physician whose knowledge of diagnosis is unimpeachable. It would be also advisable to temper the energy and sanguine character of youth with the caution and reasoning power of age. A physiological laboratory, with every necessary instrument, appliance, and chemical, together with an hospital, would be necessary adjuncts.

But when such a committee have completed their labours, published their report, and made their suggestions, even with the assistance of one or more hospital physicians, the co-operation of a large number of practitioners becomes necessary to give it that general and varied trial which is necessary to test its value. No one practitioner, even with the assistance of a large hospital, can hope to examine and carefully record such a number of cases of any one disease as will render his trials of great value. Such, at the same time, is the want of union among medical practitioners, and so difficult is it to impress them with the advantage of working in concert to advance medicine, that several years may elapse before any investigation is finally completed and receives the authoritative sanction of numbers.

And here I would observe that there is only one way in which, as it seems to me, any particular treatment can ever become, for the future, really authoritative and entitled to the confidence of the profession at large. It is, that the facts connected with it should be carefully observed, and the results so recorded that they may be easily compared with similar results obtained by other methods. For this purpose the age, sex, general vigour of the body, and other facts necessary to be known, under the circumstances, should accompany any general statement as to the good effects of the remedy or treatment, so that all may judge of its value for themselves. This would be the crowning proof of its utility, for it need scarcely be pointed out that even the general adoption of a remedy and a particular practice, or a universal belief in its efficacy, is no guarantee that it is really the best that can be followed. Of this, the practice of bleeding and an antiphlogistic treatment for acute inflammations, and that of a six-weeks' course of mercury for the removal of syphilis, both of which prevailed between thirty and forty years ago, offer illustrations.

It is a fact which cannot be disputed, that the mortality of a strictly anti-phlogistic practice in acute pneumonia was one death in three cases, and that simply by leaving off a lowering treatment the mortality was diminished to one in seven. In the same manner it has been satisfactorily proved that a general non-mercurial treatment of syphilis cures the disease on an average in two-thirds of the time, and with only one-half the number of secondary cases. Whether there are any cases of pneumonia that still demand blood-letting, or some cases of syphilis that still require mercury, is a question not yet decided, but there can be no doubt that we owe to statistical research the important results to which I have referred. Tabulated facts and numbers therefore, which correctly estimate the amount of benefit obtained, are what is necessary, instead of vague generalizations, mere opinion, and too often unfounded assumptions. To this end co-operation among members of the profession is necessary, but the difficulty of attaining it may be estimated by the result of a trial in this direction which was commenced by the Association in 1862.

At the annual meeting of that year in London, a committee was appointed, who recommended that various subjects should be proposed for investigation by this Association. Certain members of that committee each agreed to prepare a schedule, to be circulated with the *Journal*, to receive the returns and reports on, or publish the results. Accordingly, four such schedules were so circulated, and you may feel curious to know the results of this appeal to upwards of 2000 medical practitioners.

Eighteen schedules were returned to Dr Fleming of Birmingham, containing 100 cases in which tapeworm was treated by the male shield fern.

Twenty-one schedules have been returned to myself, containing 152 cases of acute pneumonia, mostly treated on the restorative plan.

Nine schedules were returned to Dr Harley, containing 23 cases of jaundice, treated by benzoic acid, mercurials, and podophyllin.

Three schedules were returned to Dr Handfield Jones, containing 3 cases of non-syphilitic psoriasis treated in various ways.

The only report published is that by Dr Fleming, who informs us, that the cases returned to him "establish beyond doubt the great efficacy of the oil of the male shield fern in tapeworm, and its superiority to the other known remedies of this disease. Further," he says, "our report points very decidedly to the most efficient mode of exhibiting the drug; and the whole inquiry has, as I have reason to know, rendered excellent service to therapeutics, by making the virtues of the oil of male fern more widely known and employed throughout the profession" (*British Medical Journal*, January 15, 1864, p. 26).

It will therefore be seen that this report of Dr Fleming has been of great advantage, and so far fully justifies the proposal of the Association. One hundred cases also, where the problem is so simple as the expulsion of a worm, may perhaps be regarded as data amply sufficient to establish the therapeutic virtue of the remedy. Where, however, the problem to be solved is more complex, as in the three other cases, it must be admitted that the returns are by no means sufficient, and that this effort to obtain extensive data for determining the best treatment of acute pneumonia, jaundice, and psoriasis, has as yet been unsuccessful.

Notwithstanding, I still entertain the hope, that through this great Association of medical men something may be done to settle doubtful modes of treatment. If instead of 21 schedules, for example, as to the treatment of pneumonia, yielding 152 cases, it were possible to get 200 schedules with 1500 cases, I think all the vexed questions concerning the treatment of that disease might be permanently solved. Even this only supposes that one-twelfth of our number should fill up a schedule with such cases of the disease as they may encounter for twelve months.

For any scientific investigation, funds must be raised to remunerate the talent and toil which an extended and useful inquiry will necessarily involve. With such aid, properly applied, we have good evidence that much may be done. The recent Government Report on the Cattle-plague, for instance, points out how the co-operation of various individuals may be so directed as to exhaust a medical inquiry. The annual Sanitary Reports of Mr Simon, conducted on a similar plan, exhibit a series of investigations which are invaluable to the medical man. A like series of reports on diseases, or as to the actions of remedies on the healthy or certain morbid states of the economy, there can be no question, would not only greatly tend to the advancement of medicine, but would gradually exert an authority which would be generally respected. When, also, we regard the advanced condition in which we find the science of medicine, there can now be little fear that such inquiries would conduce to the exclusive systems of treatment into which some men were formerly led.

It was in every way worthy of the position held by Professor Acland of Oxford that he should have proposed to the Medical Council that a sum of £250, to test the properties of drugs, be granted out of the contributions levied from the profession. But notwithstanding it constitutes one of the duties of that Council to publish from time to time a Pharmacopœia, the application was refused on the ground that it constituted no part of its business to make such investigations. Exactly the same thing may be said by the government, by the corporations, by scientific societies, and indeed by each medical practitioner. In this way, we arrive at the familiar paradox, "That what is everyone's business is nobody's business."

From all the consideration that I can give this subject, the present standpoint of practical medicine appears to be—

1. That the empirical method of treating disease has reached its utmost limits, and that little further improvement is to be anticipated from it.

2. That the great advance which has taken place in the science of medicine has led, and is leading, to various modifications in the rules of medical practice, which only lately were in general use.

3. That these modifications principally consist in putting more confidence in the powers of nature, having recourse more frequently to the assistance of diet and other hygienic influences, and in employing more sparingly blood-letting and other so-called heroic remedies.

4. That the value of many remedies in certain diseases is unquestionable, and that their judicious employment confers invaluable benefits upon mankind; but the utility of others is disputed or little known, and with regard to these a careful investigation is imperatively required.

5. That such investigations demand great labour, advanced knowledge, and much valuable time, and that experience has demonstrated the impossibility of carrying them out satisfactorily without funds to remunerate the investigators.

6. That all applications of scientific treatment require the co-operation of medical men at large, and that no trustworthy results are likely to meet with general confidence in future, unless founded on extensive data, and formularized by a correct statistic.

From the foregoing survey of what appears to me to be the actual condition of the science and the art of medicine, two considerations are suggested,—1. That the greatest development and encouragement should be given to all those methods of investigation, the united results of which constitute what may be called medical knowledge; and, 2., That the determination of how far this knowledge is useful, when practically applied to the cure or relief of diseases, demands the more cordial union and co-operation of the profession at large.

I would only observe, on the first head, that if, as we have endeavoured to show, science ought to be made the foundation of medicine, then, so far from clinging to a past authority, we ought boldy to re-investigate everything that does not repose upon an exact and solid basis. Hitherto more weight has been given to expressions of opinion or of belief than to what can be proved or demonstrated. Hence the opposing views of even eminent authorities on the plainest procedures, not only as exhibited in their diagnosis and treatment of disease, but in their evidence on all litigated questions. Should we not make an effort to settle these differences? But past authority is here wholly incapable, for such is its inherently conflicting character that no one can suppose it to be available for solving any existing difficulty whatever. What then is required is fresh research and correct reasoning, and every one acquainted with the resources of modern science must feel persuaded that, if combined and put into operation, they are amply sufficient for the purpose. Indeed, I trust it will be apparent from what has been previously said, that the different branches of medical science are now so advanced as to be capable of solving difficulties which formerly they could not. All that seems requisite is, that their cultivators should unite to obtain the end in view.

Some maintain that our profession ought to be a learned one, and the Medical Council have recently resolved that, while a knowledge of Greek shall in future be imperative on students, an acquaintance with natural philosophy and logic shall be altogether optional. It is with the greatest deference I venture to think that such a decision has not been made with a full comprehension of the tendencies of our science, or of its future requirements. It may be doubted also whether the habits of mind acquired by cultivating a literary taste and an appreciation of the classic authors, are such as will best fit the intellect for grappling with those difficulties which the severe study of vital action in health and disease involves. To this end mathematics, logic, and physics are absolutely essential.

With regard to the second head, I would remark that the British Medical Association numbers among its members many who are eminently well qualified to unite, both in scientific investigation and in practical observations. Will they do nothing in their collective capacity to solve satisfactorily one doubtful point as to the action of a medicine or the treatment of a disease? At this moment we are called upon to cope with a formidable epidemic, the numerous individual observations that have been made concerning which still leave us in doubt whether it be or be not infectious, what is its pathology, and whether it is better treated by laxatives or by astringents. What a noble spectacle would it present, if the two thousand members of our Association would only now agree during the ensuing year to direct their energies to an investigation into the nature and treatment of Asiatic cholera! Might not a central committee be appointed, which, operating through the many branches scattered over the country, would secure chemical, histological, and pathological research, combined with accurate, uniform, and extended observation? Would any of us grudge a small contribution that might serve to remunerate the labours, talent, and consumption of time involved in such an inquiry?

Whatever you resolve on, Gentlemen, to me it is certain, that we have arrived at that epoch in the history of medicine which demands that truth in science and truth in art should no longer be kept asunder; that the traditions of old and less enlightened times should give way to the advancing spirit of inquiry that characterizes the age we live in; and that the separate, and, because separate, too frequently opposing efforts of individuals should merge into the catholic endeavour of solving by union and mutual help those questions which it has been demonstrated have baffled solitary research. The whole scope and tendency of the modern science and art of medicine indicate that future progress can alone be secured by combined labour: and I can conceive no more worthy, as there is no more appropriate, object for the consideration of this Association, than the manner and methods by which this great work could, through its agency, be prosecuted and accomplished.

COMMISSIONS IN THE INDIAN MEDICAL SERVICE.

THE following Candidates were successful at the Competitive Examination at Chelsea in March last, and have undergone a course of instruction at the Army Medical School: with the total number of marks (maximum 6900) obtained at the Examinations at Chelsea and at Netley:—

Names.	*Studied at*	*Marks.*
Griffith, G.	London,	5060
Cameron, L.	Edinburgh,	5060
Raye, D. O. C.	Ireland,	5036
Gage, J. T.	Aberdeen,	4600
Vesey, R. M.	Dublin,	4580
Warburton, W. P.	Edinburgh,	4460
Birch, E. A.	Ireland,	4370
Palmer, D. P.	Ireland,	4320
Keegan, D. F.	Dub. & Lon.	4135
Galloway, W. W.	Aberdeen,	4098
Eades, L. E.	Edin. & Dub.	4090
Gray, W.	Dublin,	4085
Hughes, D. E.	Edinburgh,	3945
M'Kenzie, S. C.	Edinburgh,	3936
Holmested, T.	London,	3852
Macpherson, J.	Aberdeen,	3770
Bowman, R.	Ireland,	3767
Laing, A.	Edinburgh,	3760
Miller, A. H.	Edin. & Dub.	3705
Cody, T.	Edin. & Irel.	3670
Nanney, S. C.	Lon. & Glas.	3637
Raby, J.	Lon. & Edin.	3395
Shannon, P. J.	Ireland,	3130
M'Vittie, C. E.	Edin. & Irel.	3023
Cullinan, C. M.	Ireland,	2955
Mayer, H. C.	Edin. & Irel.	2955
Rickard, F. M.	London,	2720
Bakman, D. F.	Edinburgh,	2590

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Da Costa,—Medical Diagnosis, with special Reference to Practical Medicine. By J. M. Da Costa, M.D. Second Edition. Philadelphia, 1866.

Howe,—Reflections on Cholera. By A. H. Howe, M.D., etc. London, 1866.

Human Blight and Cattle Blight—the Cholera and Cattle Plague. London, 1866.

Sédillot,—Traité de Médecine Opératoire, Bandages et Appareils. Par le Dr Charles Sédillot. Tome Seconde. Troisième Édition. Paris, 1866.

Sedgwick,—The Nature of Cholera as a Guide to Treatment. By William Sedgwick, M.R.C.S., etc. London, 1866.

Voisin,—Contribution à l'Histoire des Mariages entre Consanguins. Par le Dr A. Voisin. Paris, 1866.

Part First.

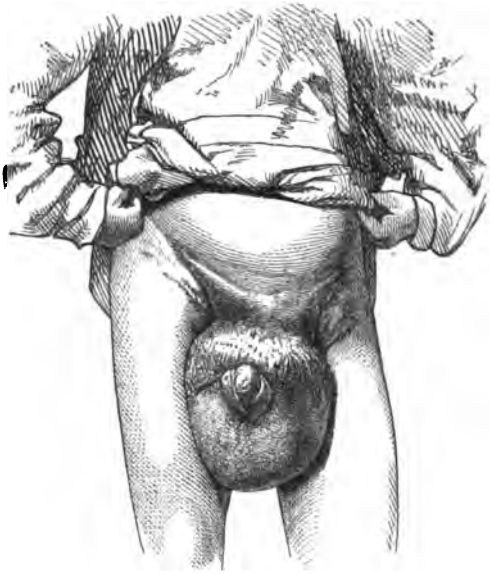
ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Elephantiasis of the Scrotum.* By JAMES SYME, Esq., F.R.S.E., Surgeon to the Queen in Scotland, and Professor of Clinical Surgery in the University of Edinburgh.

HOWEVER frequent elsewhere, elephantiasis of the scrotum is so rare in this country that the following case may possess some interest, more especially as it tends to illustrate the progress of improvement with regard to this subject of surgical treatment. When Mr Liston removed the large tumour of this kind, which weighed forty-two pounds, in 1823, he had little information derived from the experience of other operators; and well recollecting the painful uncertainty as to what should be the course of procedure on that occasion, I feel very grateful for the recorded observations of later writers, and particularly those of my friend Dr Fayrer of Calcutta, which enabled me to undertake the operation about to be related with a confidence that was justified by the result. Mr Liston, desiring to save the genital organs, placed his patient stooping over a table, and made an incision from behind into the neck of the tumour, with the effect of causing such a gush of blood as at once induced him, by rapid sweeps of the knife, to detach the whole mass, including both penis and testicles. The hæmorrhage thus caused may be better imagined than described. It deluged the floor upon which the patient sank insensible with the sphincter of his bowel relaxed, and every appearance of immediate dissolution. With my fingers and thumbs I arrested any further flow from ten bleeding points, while other assistance was supplied, and the arteries were tied. Contrary to expectation, the patient rallied, and recovered; but the appalling circumstances of his case left such an impression on my mind as rendered me very averse to venture on a similar undertaking, until the following case presented itself, and led me to consider the plan of procedure most conducive to success.

The surgeons most experienced in this operation have established as its great principle that the genital organs should be dissected out of the tumour, by cutting in its front at the middle line, in order to avoid the large vessels, which enter from the lateral and perineal regions. After the firm integument has been divided, the soft substance of the morbid growth allows the penis and testicles to be felt and detached from their neighbouring connexions with much more ease than might be expected, and when this has been done, the mass may be detached so rapidly that, with good assistance, little blood is lost, or danger of life incurred by the patient, reclining, as he ought to do, in the horizontal posture. The employment of a ring or ligature surrounding the neck of the tumour, which has been advised by some operators, would, I think, be apt to prove more embarrassing than useful.

Mr G. W., æt. 26, from Glasgow, applied to me in the early part of August last, on account of an hypertrophied scrotum, which presented the characteristic features of elephantiasis. As may be seen from the photographic representation, the tumour was so large as not only to produce great inconvenience, but to render any active employment impracticable. The left leg, from the knee downwards, presented an enlargement of the same kind, to nearly twice its natural size. The young man stated that he had gone to Australia three years ago, and that three months after being there he had observed the swelling of his scrotum, which, since then, gradually increased, and, more recently, had been followed by that of the leg.



On the 28th of August, having placed the patient on his back, and administered chloroform, I introduced a blunt-pointed curved bistoury into the opening, from which the urine issued, and cut through the body of the tumour directly upwards, so as to expose the glans, then extended this incision to the pubes, and down to the body of the penis, which was detached from its connexions, and held up by an assistant. I next cut laterally through the tumour, so as to expose the left tunica vaginalis, which, having been separated from its surrounding attachments, was held in the hand while an incision was carried along the cord to the pubes, and then transversely to the groin. The same procedure was repeated on the right side, so as to give the wound a T form; and, lastly, while the organs that had been saved were held out of harm's way, I detached the mass by a free use of the knife.

The operation, as just described, was performed without any delay or difficulty, and in one slight respect appears an improvement of the plan pursued by Dr Fayrer, who makes three longitudinal incisions—one of which is in the direction of the penis, and the others along the spermatic cords. Instead of this, searching latterly for the testicles through the soft substance of the tumour after digging out the penis, and using them as guides in cutting up towards the pubes, may, I think, perhaps be found more convenient. Little blood was lost, as the gentlemen who assisted me quickly compressed the vessels. Some folds of lint, supported by a bandage, were placed over the penis and testicles to keep them in their proper position, which, in the course of a few days, they were found to retain with the most natural aspect, and contraction proceeded so rapidly that the patient was able to return home before the end of three weeks. At the end of a similar period he came to show the wound almost completely cicatrized.

It is worthy of notice that the left leg, which presented such distinct features of elephantiasis as made me hesitate to undertake removal of the scrotal tumour, diminished quickly after the operation, so that when the patient left the hospital there was hardly any trace of the enlargement. Had the femoral artery been tied, this spontaneous improvement would doubtless have been attributed to a procedure that, so far as I can see, has no foundation on any sound surgical principle.

ARTICLE II.—*Report of Clinical Cases treated in the Surgical Wards of the Royal Infirmary, under the Care of* Professor SPENCE, *from October* 1864 *to October* 1865. By P. M. BRAIDWOOD, M.D., late Resident Surgeon.

(*Continued from p.* 330.)

TUMOURS.

Tumours of the Breast.

1. J. M., æt. 40. Scirrhus of mamma, of six months' duration. Axillary glands slightly enlarged. Excision. Recovered.

2. Mrs M'I., æt. 40. Scirrhus of mamma, of twelve months' duration. Skin adherent at outer side of nipple. No glandular complication. Excision. Recovered.

3. C. F., æt. 25. Scirrhus of mamma, of the size of a walnut. Glands not affected. Excision. Recovered.

4. E. P., æt. 30. Scirrhus of mamma, of six months' standing. One axillary gland enlarged. Excision. Recovered.

5. E. H., æt. 26. Fibro-cystic tumour of three months' growth, and of the size of a pigeon's egg. Tumour removed. Recovered.

6. J. C., æt. 32. Fibro-cystic tumour of two years' standing. Tumour removed. Recovered.

7. J. M'D., æt. 32. Fibrous tumour of two years' growth, and as large as a walnut. Tumour removed. Recovered.

Tumours of the Face and Neck.

8. F. T., æt. 26. Cystic tumour of upper jaw, of the size of a cherry. Portion of alveolar wall removed. Contained serous fluid and cholesterine. Recovered.

9. A. B., æt. 30. Wen on forehead. Removed. Recovered.

10. A. D., æt. 55. Wens of scalp, of which one was as large as an orange. Removed. Recovered.

11. J. R., æt. 72. Epithelioma of lower lip, of six months' duration. Excision. Recovery.

12. M. R., æt. 59. Epithelioma of lower lip, of two years' duration. Excision. Recovery.

13. M. M'G., æt. 73. Epithelioma of *upper* lip, of two months' duration. (Had a similar growth removed three and a-half years ago from the *lower* lip.) Excision. Recovery.

14. M. C., æt. 3 months. Large nævus of upper eyelid. Ligatured. In process of cure.

15. J. A., æt. 30. Bronchocele, of five years' standing. Tapped and injected with tr. iodini. Recovered.

16. Mrs B. Malignant tumour of right parotid region. First observed twenty-two months ago in the submaxillary region; but during the last six months has increased rapidly. On admission it measures six inches by four, implicates the skin, extends below the sterno-mastoid, and has a purple line at its posterior part. Appearance markedly cachectic. Dismissed as unsuitable for operation.

17. T. S., æt. 8. Malignant tumour of right superior maxilla, first observed ten weeks ago. Has protrusion of eyeball, dilatation of pupil, pain in the head, and at the posterior part of right alveolar process the tumour is felt extending behind the soft palate. Dismissed as unsuitable for operation.

18. R. Y., æt. 29. Malignant tumour of left superior maxilla, first noticed four months ago. Causes protrusion of eyeball, obstruction of left naris, and extends backwards to the pharynx and vertebræ. Dismissed as unsuitable for operation.

19. S. W., æt. 41. Malignant tumour of right superior maxilla, of the size of an orange. Right upper jaw removed. Recovered.

Tumours of the Superior Extremity.

20. C. D., æt. 55. Fatty tumour on arm, of two years' standing. Removed. Recovered.

21. J. B., æt. 48. Fatty tumour on arm, of six years' standing. Removed. Recovered.

22. D. F., æt. 40. Fatty tumour on arm, of six years' standing. Removed. Recovered.

23. C. J., æt. 62. Fibroid tumour in front of elbow. Removed. ecovered.

24. J. H., æt. 46. Erectile tumour of forearm. Removed. Recovered.

25. B. D., æt. 15. Malignant tumour of right arm. Amputation. Secondary hæmorrhage on fifteenth day after operation. Pyæmia. Death.

26. A. S., æt. 17. Fungating malignant tumour over right shoulder, of five months' duration. The tumour being undefined in extent, operative interference was considered unwarrantable.

27. M. T., æt. 33. Malignant tumour of scapula, as large as a child's head, occupying the infra-spinal fossa. Subscapular artery observed to be of nearly the same size as the brachial. Patient emaciated and markedly cachectic. Sank on seventeenth day after admission. Autopsy revealed the existence of cancer in almost every organ of the body.

28. A. A., æt. 64. Epithelial cancer of right hand and forearm, of four years' standing. Amputation. Pyæmia. Death.

Tumours of the Inferior Extremity.

29. D. K., æt. 40. Exostosis of great toe. Removal. Recovery.

30. M. T., æt. 34. Hæmatocele of right patellar bursa. Tumour removed. Died from organic disease of liver, spleen, and kidneys, on twenty-eighth day after operation.

31. J. K., æt. 46. Cancroid tumour of thigh. Removed. Recovered.

32. M. W., æt. 5. Osteo-carcinoma of right femur. Amputation at hip-joint. Recovered.

Tumours of the Testicle and Tunica Vaginalis.

33. W. B., æt. 38. Medullary tumour of testicle. Excision. Recovery.

34. J. M'J., æt. 37. Medullary tumour of testicle. Excision. Recovery.

35. J. F., æt. 2. Medullary tumour of tunica vaginalis. The tumour was observed shortly after birth. About six weeks ago it was punctured with a trocar, but only blood escaped. On admission, the tumour was as large as a small cocoa-nut, but owing to patient's weakly condition, and to the dilated state of the superficial thoracic and abdominal veins, operative interference was withheld. He died two days after dismissal.

Remarks.—The tumours of the mamma recorded in the above series were those most commonly met with, and require no special notice. In addition to the above instances of scirrhus not suitable for operation, many others came for advice, but were not of sufficient interest to be recorded here.

Of the cases operated on for malignant disease, the following call for a few remarks. The patient S. W. was admitted into hospital with a tumour of the upper jaw, involving the whole of the right superior maxilla, and in the palatine aspect extending towards the left. The tumour had been observed only three months, and its growth had been very rapid. On admission the tumour was as large as an orange, was increasing very rapidly, and the skin of nearly the whole of the right cheek was adherent to it. Patient was very weak and depressed. Still, as the growth did not extend back towards the spine, as the base of the cranium was not involved, and as the eye was not displaced, Mr Spence thought it right to operate and thus give the woman a chance of at least prolonged life. The whole of the tumour was accordingly removed, together with a further section of the palate which seemed somewhat affected. The gap in the integuments was closed by a flap of skin dissected from over the lower jaw and upper part of the neck. Convalescence was rapid; and patient left the hospital healthy and happy at the end of the sixth week after the operation. The lad B. D. had applied two years previously with medullary disease of the arm, which appeared to have begun in the soft parts, but did not involve the bone. Amputation was at that time recommended, but his father would not hear of it. He was brought to hospital on account of hæmorrhage having occurred from an ulcerated surface. The tumour was found to occupy the whole of the outer and posterior aspects of the arm, implicating all the soft tissues, but not the humerus, and having three irregular bulgings on its surface. Patient anæmic; but no glandular complication present. Amputation at the shoulder-joint was performed as affording the only chance, and the tumour being found to extend pretty deeply into the axilla, as much as possible of the muscular tissue was removed. For a fortnight after the operation the patient did well; then rigors occurred, the flaps gaped, ulceration extended, and the axillary artery was opened. But the vessel was secured higher up before the patient lost much blood. The rigors continued, and the boy died of pyæmia in the fourth week after the amputation, A. A. was admitted with epithelial cancer of the hand and lower part of forearm, which commenced four years ago as a hard, itchy swelling, as large as a pea, and situated in the space between the thumb and forefinger. Patient ascribed the disease to working with lime; and he consulted Professor Spence two years ago when it was in much the same state as at present. He enjoyed good health, but within the last three months he had experienced lancinating pains in the arm. When first seen, a single enlarged gland was felt in the axilla, which was ascribed to irritation, and which was, on admission, found to be in much the same condition. Mr Spence considered the disease to be local, and amputation below the elbow was performed. Pyæmia set in on the seventh day after amputation, and proved fatal.

Of the tumours of the testicle, the first was remarkable for its size and its origin. The patient W. B., a coastguardsman, was engaged aloft in shifting topsails, and received a blow on the left testicle, causing sharp pain and faintness. This soon passed off, and he experienced no further inconvenience for several days, when, after having been much exposed to cold, the pain returned accompanied with swelling. He was sent to sick quarters, and it was ascertained that a hydrocele had formed. It was tapped, and a good deal of clear serum was evacuated; but a hard swelling about the size of a walnut remained at the lower part of the testicle. This operation relieved him for a time, but the swelling soon returned, and a fortnight afterwards he was again tapped. On this occasion the fluid contained a considerable admixture of blood; the tumour formerly recognised was now about the size of a hen's egg. The patient returned to his duty, and three weeks later, whilst aiding in the rescue of the crews of three wrecked vessels, he was not only exposed to a thorough drenching and to extreme fatigue, but received a blow on the scrotum from part of the rocket apparatus. A few days afterwards the swelling increased; he was again tapped, and on this occasion only a little blood came away. The operation gave no relief; on the contrary, the symptoms were aggravated and the swelling became larger and more tense. When admitted into Edinburgh Infirmary, a large tumour, ten inches in length and seventeen in circumference, was found to occupy the scrotum; there was a feeling of fluctuation at the top and bottom, but the tumour had a doughy sensation in the intermediate part. The characters of the swelling resembled in some respects those of a hydrocele; but from the opacity of the lower part when examined by light, and from the history of the case, it was considered that it might be a hæmatocele, or more probably a malignant tumour of the testicle. Accordingly, in operating, Mr Spence was prepared either to treat it as a hæmatocele or to remove the testicle. A long incision was made over the tumour where fluctuation was most distinct. The sac was punctured, and a quantity of clear serous fluid evacuated. On introducing a finger into the opening, the tumour was distinctly felt to be of the gland itself; and the testicle, along with an elliptical portion of skin, was accordingly removed. The appearance of the tumour on section was peculiar, resembling more than anything else an effusion of blood into the body of the testicle. Still, Mr Spence looked upon it as a medullary growth; what would formerly have been called a fungus hæmatodes of the testicle. Wound healed almost entirely by primary union.

Epithelial cancer is occasionally found developed in an old cicatrix, but is rarely to be met with of so large size as in the case of J. K. The tumour, as large as an adult hand, occupied the outer aspect of the upper third of the thigh. It had the usual characters of a cancroid growth, but did not affect the patient's health. It was removed by two elliptical incisions extending from the trochanter major to beyond the middle of the thigh, and the wound when stitched was fourteen inches long. Recovery was rapid.

Hæmatocele of the patellar bursa is a rare form of disease. The tumour was observed four years ago. After removing an elliptical portion of skin the cyst was dissected out, but was so adherent on its inner side that in removing it, a portion of its contents (consisting of grumous fluid and fibrinous clots) escaped. Patient progressed favourably till the sixteenth day after the operation, when hæmatemesis occurred, and continued till patient died on the twenty-eighth day after the operation. The spleen, at the autopsy, was found to communicate with the stomach by a small vein.

The patient J. H. had had for many years a small tumour on the front of the forearm about two inches below the elbow. It was evidently connected with the skin, and appeared to have originally been a nævus. He came to hospital on account of recurrent bleedings from the tumour. The hæmorrhage, which was both arterial and venous, took place from a small ulcerated opening. The tumour was at once removed, when there was a good illustration afforded of the fact, that the vessels going to such growths are not enlarged, but that they become dilated within the tumour; for although the hæmorrhage from the tumour had been severe, there was little or no bleeding from the vessels cut across during the operation.

CASES OF INJURY AND DISEASE.

Wounds.

Numerous examples of this class of injuries have been treated during the session, but the following are the most instructive:—

H. M. Stabbed in left iliac region. Wound, about half an inch long, extended through the abdominal wall. Recovered.

W. S. Received a wound four inches long on back of thigh, and another two inches long on front of forearm, caused by a loaded coal-waggon. Recovered.

J. C. Admitted with wounds of palm and fingers, caused by the bursting of a gun loaded with gun-cotton. Recovered.

J. M'L. Admitted with a wound, three inches long, at upper part of popliteal space, caused by the fall of a stone. The external head of the gastrocnemius was torn from its origin, and the tendon of the sartorius exposed; but the popliteal vessels and nerves were uninjured. Recovered.

J. G. Wound on dorsum of foot, and fracture of fourth and fifth metatarsal bones, caused by a loaded cart. Fourth toe amputated secondarily. Recovered.

E. B. Wound on left cheek caused by glass. Recovered.

P. F. Wound of foot, five inches long, caused by an empty truck. Recovered.

J. C. Wound of foot caused by a van. Recovered.

A. H. Wound of leg, dividing the periosteum, caused by a barrel rolling over it. Recovered.

M. M'M. Wound of right labium minus produced by a kick. Recovered.

A. W. Wounds of leg caused by the limb being squeezed between the edge of the platform and the step of a railway carriage. Recovered.

J. M'D. Admitted with an incised wound four inches long, situated transversely over the hyoid bone. Had a severe attack of delirium tremens. Recovered.

Remarks.—The case of A. W. confirms the rule that injuries produced by causes similar to the above, and where great pressure has been exerted, though at first apparently slight, are often slow of healing. The bones of the leg were not fractured, but a large amount of suppuration occurred, and many incisions required to be made. In cases of lacerated wounds, various modes have been tried in order to lessen the amount of suppuration by preventing atmospheric influence. The patient J. C. had his hand constantly immersed in water of an equable temperature, and this method succeeded in his case, as also in several others. By this means, which is in Germany commonly employed in the treatment of burns, cleanliness is attained without incurring the extreme pain of removing dressings; and the stimulating action of lotions can be obtained by medicating the water.

INJURIES OF THE HEAD AND SPINE.

Mrs M'I. Admitted with a scalp wound and depression of cranium near the posterior fontanelle, caused by falling a height of one and a-half stories. On admission, patient was partially conscious, and complained of intense pain in the head. A few days later she had vomiting, with restlessness and hyperæsthesia of scalp. Erysipelas, with extensive suppuration under the scalp, followed. Recovered.

J. G. Wound on forehead, caused by the kick of a horse. Recovered.

M. F., æt. 50. Scalp wound eight inches long, extending from ear to ear, and produced by the handle of a revolving crane. The scalp was reflected backwards almost to the occiput, and forwards over the eyes. Had a slight attack of erysipelas. Recovered.

M. R. Thrown out of a gig, and admitted with symptoms of concussion. Recovered.

M. C. Fell between a boat and the jetty from a height of twenty or thirty feet. Had slight concussion; but a few days later showed symptoms of compression. Recovered.

J. B. Slight concussion, from being knocked down in the street. Recovered.

J. D. Slight concussion, from being knocked down in the street. Recovered.

F. D. Slight concussion, from being knocked down in the street. Recovered.

J. F. Concussion, produced by falling from a height of nine or ten feet. Erysipelas. Recovered.

P. W. Simple fracture of left temporal bone, received by falling downstairs. Recovered.

A. B. Compound fracture of skull, and other injuries, caused by the explosion of a charge of gun-cotton. Died.

Remarks.—The interest necessarily connected with this class of cases,—from their frequency, the importance of the organs concerned, and the serious results which often follow them,—is increased by the fact that each case calls for special attention, either on account of the nature of the injury, of its origin, or of the symptoms attending it. No cases, moreover, are more difficult to treat, inasmuch as rest is a most important part of the treatment; and to this—if the injury is apparently slight—the patient often will not consent. The diagnosis of head injuries, especially of those met with in hospital practice, is often very difficult, seeing that the symptoms produced by the injury are obscured by the state of intoxication which frequently co-exists. It is, therefore, no uncommon occurrence (where the examination of the patient has been hurried) to find the symptoms ascribed to the action of alcohol which are in fact owing to an overlooked fracture. The case of Mrs M'I., in which the depression detected on admission was deep enough to admit of the insertion of the thumb, exemplifies well Professor Spence's rule,—"that in the majority of such cases, even if the symptoms be those of compression, when the fracture is simple, the wisest plan is not to interfere, unless the symptoms do not yield to depletion, purging, and other general remedies." In the case of M. F., the scalp wound was extensive, and the bone considerably denuded. Patient recovered rapidly, and only two small exfoliations separated. The cases of concussion were slight and uncomplicated, except in the instance of M. C. Immediately after receiving the injury he had concussion; but, a few days later, symptoms of compression set in. Exacerbations, moreover, took place at intervals, and suggested the possibility of either passive extravasation or of chronic serous effusion occurring. The treatment by rest, cold to the head, blisters, and leeches, proved effectual in preventing a fatal issue; and the pathological condition remains uncertain. The form of fracture sustained by the patient P. W. is one seldom met with. On admission, pulse 40, patient was semi-conscious, pupils contracted and sluggish, and a fluctuating swelling was felt beneath the left temporal muscle. Cold was applied over the head, leeches behind the ears, and an enema administered. Next day was better. Pulse 50. Complained of pain and giddiness in the head, and of singing in the ears, which was relieved by venesection. About a week later, symptoms of cerebral inflammation presented themselves; but they gradually passed off, and patient made a good recovery. In this case the diagnosis was easy, seeing a transverse fissure of the squamous portion was distinctly felt, and the effusion beneath the temporal muscle also indicated fracture.

In the case of the patient A. B., the injuries were caused by the explosion of a charge of gun-cotton. On admission, there was found a scalp wound four and a-half inches broad, extending from the forehead to the vertex, with the cranium denuded half this extent; also a fracture extending for three and a-half inches along the sagittal suture, terminating anteriorly at the left orbit, and posteriorly at the left mastoid process. The bone was not depressed, but in front the internal table was felt exposed, and venous oozing occurred at this point. Patient had also a punctured wound of the thorax, perforating the right lung; and several wounds of the arm and neck. From the first he was unconscious and delirious, and continued so till death—twenty hours after admission.

TABULAR VIEW OF FRACTURES.

Lower Jaw.

H. R., admitted July 1. Died July 11. (Compound.)
T. S., admitted July 26. Cured August 6.

Clavicle.

G. L., admitted June 12. Cured July 3.

Ribs.

J. M'C., admitted December 14. Cured December 24.
J. P., admitted February 23. Cured March 11.
J. T., admitted April 26. Cured June 5.

Dorsal Vertebræ.

J. K., admitted April 12. Died April 16. (Complicated with other injuries.)

Pelvis.

R. T., admitted November 24. Died November 24. (Complicated with rupture of the urethra and bladder.)
D. H., admitted May 17. Died May 18.
Mrs R., admitted June 28. Cured July 8. (Iliac crest.)
A. R., admitted August 14. Cured September 4. (Iliac crest.)

Femur.

W. K., admitted August 10. Cured October 25.
A. M., admitted Sept. 17. Cured Nov. 4. (Extracapsular of neck.)
C. W., admitted Dec. 20. Cured Feb. 15. (Intracapsular of neck.)
C. C., admitted Dec. 21. Cured Jan. 12. (Intracapsular of neck.)
W. M'G., admitted April 5. Cured May 21.
J. M., admitted April 12. Cured May 26.
B. W., admitted May 10. Cured July 7.
R. D., admitted July 5. Died July 18, from peritonitis.

Patella.

J. B., admitted August 23. Cured October 5.
J. L., admitted January 1. Cured February 13.

Tibia and Fibula—Simple.

B. G., admitted September 22. Cured December 12.
J. A., admitted October 11. Cured December 19.
R. T., admitted April 19. Cured June 24.
R. C., admitted June 16. Cured July 8.

Tibia and Fibula—Comminuted.

C. C., admitted Oct. 3. Cured Dec. 2.
J. S., admitted Oct. 9. Cured Nov. 10. (Foot dislocated backwards.)
J. G., admitted Nov. 23. Cured Jan. 9.
F. M., admitted Dec. 14. Cured Feb. 23.

Tibia and Fibula—Compound.

G. H., admitted Jan. 16. Died Feb. 8, from delirium tremens. The fracture extended into the ankle joint.
F. M., admitted April 10. Cured June 14.

J. L., admitted June 2. Died July 19. (Amputation below knee.)
J. M., admitted June 27. Died July 8. (Amputation below knee.)

Tibia—Simple.

T. M., admitted Aug. 4. Cured Aug. 30.
M. C., admitted Jan. 4. Cured Feb. 17.
P. M., admitted Jan. 4. Cured March 1.
W. W., admitted March 12. Cured April 20.
A. B., admitted May 3. Cured May 21.

Fibula—Simple.

F. D., admitted Oct. 6. Cured.
P. M., admitted Feb. 14. Cured.
J. K., admitted Feb. 28. Cured.
A. B., admitted March 8. Cured.
J. T., admitted April 25. Cured. (Pott's.)
B. K., admitted May 30. Cured.
C. D., admitted May 31. Cured.
J. M., admitted June 14. Cured.

Metatarsus—Simple.

J. A., admitted Oct. 13. Cured.

Miscellaneous Cases of Fracture.

J. S. Admitted Nov. 16. Cured Dec. 29. Simple fracture through condyles of humerus, with dislocation of both bones of forearm backwards, and probable fracture of acetabulum.

J. F. Admitted Jan. 13. Cured March 30. Compound fracture of both bones of forearm, and fracture of femur.

R. S. Admitted Feb. 15. Died Feb. 18, with tetanus. Compound fracture of both bones of leg, simple fracture of first and second ribs, and dislocation of sternal end of clavicle.

P. M. Admitted Aug. 23. Cured Oct. 20. Simple fracture of radius, and of both bones of leg.

J. A. Admitted Aug. 2. Cured Oct. 7. Comminuted fracture of femur, dislocation of right knee, of both elbows, and scalp wound.

Mrs R. Admitted April 12. Died April 19. Compound dislocation of elbow and compound fracture of radius near the wrist. Amputation.

D. S. Admited Sept. 6. Died Sept. 6. Compound fracture of arm, simple fracture of femur, and concussion.

Remarks.—Besides the above cases of fracture which were treated in the hospital, there were numerous cases of fracture of the upper extremity treated as out-patients; and which afforded examples of almost every variety of these injuries. There occurred also one case of dislocation of the lower jaw, two dislocations of the acromial end of the clavicle, two of the elbow-joint, and six of the shoulder, which were treated as out-patients.

The above series includes a large number of cases of especial interest. In the case of H. R., the compound fracture of the lower jaw was caused by a large stone rolling on patient as he worked at the bottom of a mine. The wound extended through the soft parts from the symphysis to the os hyoides, and through it food and saliva escaped. Patient was fed by the stomach-pump, and the discharge from the wound was very copious and fetid. He also suffered from bronchitis, which, along with his weak condition and imperfect means of nutrition, proved fatal in a few days. Simple fractures of the clavicle form generally part of the routine of out-door hospital practice, but in the case of G. L. a peculiar variety of this injury existed. Patient was thrown off a cart; and on admission, in the supra-spinal fossa of the right scapula, an osseous prominence was felt. The arm could be rotated in all directions, but this projection was irreducible. When, however, the shoulder was well braced back and elevated, the prominence became appreciably diminished. Chloroform having been administered, on examination the scapula was found uninjured; but the clavicle was fractured *within half-an-inch* of its acromial extremity, and the conoid and trapezoid ligaments consequently torn across. The inner fragment was drawn very forcibly backwards by the trapezius, and the outer fragment was depressed by the weight of the arm. The fracture, moreover, was not reducible till the whole of the clavicular attachment of the trapezius was divided subcutaneously. In order to keep the fragments in position, Sir Astley Cooper's apparatus—described in Sir A. Cooper's "Treatise on Dislocations and Fractures of the Joints," p. 353—was employed, and patient kept in bed. When dismissed, patient had good use of the arm; though a slight prominence still existed.

The fracture of the pelvis, sustained by R. T., was caused by the falling in of the "chamber" in which he worked. The fracture extended obliquely across the symphysis, through both pubic rami, and through the left ischial ramus into the foramen ovale. The fragment thus separated on the left side was driven inwards and had caused the rupture of the bladder and urethra. In the case of D. H., again, the fracture was received by falling on his right side off a loaded cart. On admission, the right iliac crest was found fractured, and there was great contusion around the hip. Patient gradually sank and died about three hours after admission. The autopsy showed a wide separation of the right sacro-iliac synchondrosis, with extensive extravasation of blood on the right side of the lower lumber vertebræ, and of the pelvis, not traceable to any one vessel. There was great bruising of the soft tissues around the hip, and the capsule of the joint was ruptured. Had also wounds of the leg.

In the case of R. D. the fracture of the femur was produced by a large grass roller passing over the limb and lower part of abdomen. Soon after admission peritonitis with violent delirium set in, and patient gradually sank.

The case of R. S. is instructive both on account of the variety of the injuries received and of the complication—trismus—which followed. Patient was shovelling earth, when a large mass fell on him and buried him for twenty minutes. When brought to hospital he was found to have sustained compound comminuted fracture of left tibia and fibula, dislocation forwards of sternal end of left clavicle, which was easily reduced, and fractured ribs. Professor Spence, on seeing the case, enlarged the wound in the leg and extracted three portions of the tibia, each two and a-half inches long, as also some small fragments which were lying detached. About forty-eight hours after admission patient became unconscious, trismus set in, and ended in death. On post-mortem examination, brain found greatly congested; spinal cord greatly congested; choroid plexuses anæmic; and a considerable amount of extravasated blood found external to the membranes of the cord, and extending from the second cervical to the first lumbar vertebra. Muscular structure of heart undergoing fatty degeneration.

DISEASES OF JOINTS AND BONES.

Shoulder-joint.

J. F., æt. 9. Commencing ulceration of articular cartilages. Cautery. Cured.

T. K., æt. 44. Rheumatic arthritis. Cautery, rest, and potas. iodidum. Cured.

A. M'K., æt. 48. Rheumatic arthritis. Cautery, rest, and potas. iodidum. Cured.

A. M'C., æt. 38. Caries of head of humerus. Excision by linear incision. Recovered.

W. S., æt. 12. Caries of head of humerus. Excision by linear incision. Recovered.

H. B., æt. 39. Rheumatic arthritis. Cautery, rest, and potas. iodidum. Cured.

A. C., æt. 23. Rheumatic arthritis. Cautery, rest, and potas. iodidum. Cure.

Elbow-joint.

D. B., æt. 21. Synovial degeneration, with ulceration of cartilages. Excision by H incision. Recovered.

H. B., æt. 7. Synovial disease with caries of articular surfaces. Patient markedly scrofulous. Excision by the linear method. Recovered.

C. M'Q., æt. 35. Anchylosis after injury. Excision by linear method. Pyæmia. Death.

W. R., æt. 7. Synovial disease and articular caries. Excision by linear method. Recovered.

Many cases of incipient articular disease and of bursitis over the olecranon were also treated.

Wrist-joint.

K. C., æt. 42. Synovial disease and ulceration of cartilages. Counter-irritation. Would not consent to excision. Relieved.

G. A., æt. 35. Synovial disease and caries. Would not consent to excision. Relieved.

A. M'V., æt. 44. Synovial disease and extensive caries. Amputation. Pyæmia. Death.

J. M. æt. 50. Acute synovitis. Blisters and rest. Cured.

R. H., æt. 50. Articular caries. Excision. Recovered.

Knee-joint.

M. C., æt. 25. Rheumatic arthritis. Blisters and rest. Cured.

H. B., æt. 13. Acute synovitis. Rest and fomentations. Cured.

A. L., æt. 15. Acute synovitis. Blisters. Cured.

J. W., æt 16. Chronic synovitis. Rest, blisters, and ol. morrhuæ. Cured.

W. S., æt. 13. Contraction of ham-string tendons, and partial anchylosis. Tenotomy and forcible extension by long splint. Cured.

J. W., æt. 17. Atrophy of leg, with long-standing dislocation outwards of patella, sequent on disease. Relieved.

J. B., æt. 44. Bursal swelling situated between the heads of the right gastrocnemius. Punctured, and about two ounces of serous fluid evacuated. Cured.

G. F., æt. 15. Acute synovitis, with effusion. Rest, fomentations. Cured.

J. P., æt. 30. Ulceration of cartilages, and caries. Excision. Death.

E. C., æt. 22. Chronic synovitis with effusion. Rest, blisters, cautery. Cured.

W. A., æt. 27. Chronic synovitis. Fomentations, rest, blisters. Cured.

A. M'W., æt. 9. Acute synovitis. Rest and fomentations. Cured.

J. W., æt. 20. Chronic synovitis with effusion. Rest and pressure by plasters. Cured.

A. T., æt. 3½. Synovial disease and caries. Amputation. Recovered.

B. J., æt. 9. Synovial disease and caries. Amputation. Recovered.

A. P., æt. 8. Synovial disease and caries. Amputation. Recovered.

J. M., æt. 40. Wound into joint. Rest and fomentations. Died.

T. S., æt. 24. Acute synovitis. Rest and fomentations. Cured.

D. S., æt. 15. Incipient synovial disease. Rest and counter-irritants. Relieved.

In addition to the above cases were treated numerous cases of bursitis and slighter forms of disease of the knee.

Ankle-joint.

J. R., æt. 22. Chronic synovitis, with distortion of foot and retraction of heel. Relieved.

A. D., æt. 19. Synovial disease and caries. Amputation. Recovered.

D. S., æt. 15. Synovial disease and caries. Amputation. Recovered.

A. W., æt. 17. Synovial disease and caries. Amputation. Recovered.

C. M., æt. 14. Synovial disease and caries. Amputation. Pyæmia. Death.

R. T., æt. 42. Synovial disease and caries. Amputation. Pyæmia. Death.

W. C., æt. 7. Synovial disease and caries. Amputation. Recovered.

Necrosis.

A. J., æt. 21. Of mastoid process. Constitutional treatment used. Relieved.

A. S., æt. 25. Of lower jaw. Sequestrum removed. Recovered.

W. M'D., æt. 11. Of humerus. Several pieces of bone removed on different occasions. Recovered.

M. B., æt. 24. Of humerus. Several pieces of bone removed. Chassaignac's tubing used. Recovered.

J. W., æt. 8. Of radius and fibula. Small sequestra removed. Recovered.

J. B., æt. 10. Of femur. Acute circular exfoliation at end of stump removed. Recovered.

J. M., æt. 10. Of femur. Several sequestra removed. Recovered.

W. M., æt. 18. Of femur: acute. Sequestra of large size removed. Chassaignac's tubing used. Recovered.

J. G., æt. 8. Of tibia. Appearance markedly scrofulous. Has been repeatedly treated for the same. A sequestrum three inches long removed. Recovered.

R. D., æt. 18. Of tibia, consequent on a railway accident received six months previously. No fracture detectable on the former occasion, but fissure diagnosed. After sawing through a considerable amount of healthy bone, a sequestrum two inches long was removed from the *medullary* surface of the tibia. Recovered.

H. B., æt. 22. Of tibia: acute. Sequestrum removed. Recovered.

Remarks.—The cases of excision above mentioned are few in comparison with the number of cases of diseased joints which were treated. The patient A. M'C. had caries of the head of the humerus and of the margins of the glenoid cavity, with comparatively slight ulceration of the cartilages. Difficulty is sometimes experienced in removing the carious edges of the glenoid cavity, but in the above instance this part of the operation was rendered easy by the use of the gouge forceps. The cicatrization of the wound was in the above case also accelerated by the insertion of a portion of Chassaignac's tubing, which allowed the discharge to drain away spontaneously. Chassaignac's tubing was used also in several cases of necrosis and was found very useful in allowing the wound to heal while the discharge had free vent. In W. S.'s case there was caries of the head and surgical neck of the humerus. After the operation he suffered from a severe attack of irritative fever, with many of the symptoms of pyæmia; but he ultimately made a good recovery.

In only one of the cases of diseased wrist was excision performed. The disease was of two years' duration, consequent on a blow, and the patient R. H. enjoyed good health. The usual signs of synovial disease and caries of the carpus were present. The operation was performed by making two incisions, one along the dorsum of the fifth metacarpal bone and inner aspect of the ulna, and another along the dorsum of the second metacarpal bone and outer margin of the radius. The tendons (except those of the flexores carpi radialis and ulnaris which were cut through) were next separated from the bones. The extremities of the radius and ulna were then sawn through, and the bones of the carpus removed. Thereafter, as the metacarpal bones were diseased, Mr Spence with a small straight saw removed three-quarters of an inch from their extremities. After the operation, the limb was adjusted in a Gooch's splint on its flexor aspect, and convalescence was rapid. When dismissed, the incisions were healed, and patient had a considerable amount of motion in the hand.

The patient J. P., on whom excision of the knee was performed, was admitted with acute synovitis of the joint. Three weeks later, symptoms of acute ulceration of the cartilages developed themselves and increased in intensity. On opening into the joint by the ordinary semilunar incision, its synovial membrane was found to have undergone gelatinous degeneration, and contained fimbriæ; the articular cartilage of the femur was ulcerated; and two-thirds of the tibial articular surface was carious. The wound healed rapidly; but, owing to the patient having been confined to bed for fourteen weeks prior to the operation, bed-sores formed on the sacrum and nates, and she sank exhausted at the end of the sixth week after the operation.

GENITO-URINARY CASES.

Lithotomy.

J. G., æt. 12. Lateral operation. Recovered.

Stricture.

J. S., æt. 39. Irritable stricture of four years' duration, barely admitting a No. 2 catheter. Retention. Perineal section. Cured.

J. S., æt. 25. Simple organic stricture of five years' duration, admitting a No. 3 bougie. Split with Holt's instrument. Cured.

J. M., æt. 52. Irritable stricture of fifteen years' duration. On admission a No. 3 catheter was with difficulty passed and retained during the night. Two days later a No. 4 was passed, and next day a No. 5 bougie was easily introduced. Rigors occurred on the following day, and a perineal abscess formed. The abscess was opened, and Mr Spence, introducing a grooved staff into the bladder, divided the stricture. Thereafter a full-sized catheter was passed and retained. The rigors, however, continued, and patient died eight days after the operation. *Autopsy.*—Phlebitis of vesical and prostatic plexuses.

J. W., æt. 29. Organic stricture, barely admitting a No. 2. Split with Holt's instrument. Cured.

D. A., æt. 48. Organic stricture of eight years' duration, complicated with fistula in perineo. Has been repeatedly catheterized. Dilatation. Cured.

J. A., æt. 39. Cartilaginous stricture of five years' duration, complicated with fistula in perineo and vesico-rectal fistula, and barely admitting a No. 2. Had been twice previously catheterized. Dilatation. Cured.

T. L. Simple organic stricture of ten years' duration, barely admitting a No. 3. Split with Holt's instrument. Cured.

A. C., æt. 38. Patient was cured of stricture by perineal section twenty years previously, but it returned eighteen months ago, and on admission barely admitted a No. 3. Split with Holt's instrument. Cured.

A. W., æt. 38. Cartilaginous stricture of twelve years' duration; had been dilated on two previous occasions; and barely admitted a No. 2. Split with Holt's instrument. Cured.

P. B., æt. 48. Simple organic stricture of eight years' duration, barely admitting a No. 2. Split with Holt's dilator. Eight days after the operation, when the stricture was well, patient had an attack of pleurisy, followed by rapid phthisis and death on the fifteenth after the operation. *Autopsy.*—A large vomica found at apex of right lung, and extensive pleurisy on the left side of chest.

Diseases of the Testicle and Scrotum.

T. G., æt. 21. Acute orchitis following an attack of retrocedent gonorrhœa. Rest, fomentations, and depletion from scrotal veins. Recovered.

R. M., æt. 59. Sinuses of testicle, from which patient had suffered seven years. Would not consent to castration, therefore free incisions made into the organ. Recovered.

J. M'K., æt. 50. Gangrenous erysipelas of scrotum, preceded by retention. Fomentations and opiates. Next day Professor Spence made free incisions to relieve tension and expedite the sloughing process which had begun; thereafter poultices were applied. Large slough separated. Recovered.

J. D., æt. 18. Admitted first with ischio-rectal abscess, which was opened, and patient absconded; eight days later, admitted with gangrenous erysipelas of scrotum and penis. On admission, scrotum and penis swollen to twice their natural size, and œdematous. At lower part of scrotum is a greyish-white patch, insensible to touch, and as large as a crown-piece. Free incisions made into the sloughy scrotum and penis. Poulticed. Large slough separated. Recovered.

W. C., æt. 26. Cancer of prostate. Symptoms present were retention from enlarged prostate, and clots in the urine. Appearance markedly cachectic. Died. *Autopsy.*—Cancerous deposits present in liver, left kidney, and prostate.

Cases of Castration

J. H., æt. 34. Abscesses and sinuses of testicle. Excision. Recovered.

W. B., æt. 38. Malignant tumour of testicle. Excision. Recovered.

J. M'I., æt. 37. Malignant tumour of testicle. Excision. Recovered.

Ruptured Perinæum and Urethra.

H. I., æt. 14. Admitted 24th May. While patient was, on the preceding evening, entering a railway van in motion, he missed the step, and was dragged along with his right leg hanging over the platform, thus having his perinæum grazed by its edge. When brought to the Infirmary, a wound three inches long, communicating with the urethra, was found in the perinæum. By means of a silver catheter the urine was drawn off.

26*th.*—Pneumonia over lower half of right lung detected. Urine passed chiefly through the wound.

31*st.*—Had rigors; but pulmonary affection improved.

The symptoms became gradually worse, and patient sank on the twelfth day after the accident.

Remarks.—The above cases require very short reference, seeing that affections of the genito-urinary system have been fully treated of in previous reports.

Both instances of erysipelas of the scrotum are interesting on account of their successful termination, and instructive, seeing that in neither case was there any urinary infiltration or stricture present. The early use of free incisions relieved the local pain and tension, and aided also the separation of the slough, which was in both instances extensive.

The patients R. M. and J. H. furnish examples of the same disease—sinuses and abscess of testicle—treated in different ways. The former patient would not consent to removal of the organ, therefore free incisions laying open the various sinuses were made.

Convalescence extended over four months, and was repeatedly interrupted by attacks of irritative fever. In the case of J. H., on the other hand, the diseased organ was removed, and recovery was completed in three weeks. This leads us, then, to the conclusion that excision of the organ is as a rule the proper treatment for chronic suppuration of the testicle; for, besides the danger of exhaustion attendant on a protracted recovery, no useful end is achieved by saving the disorganized testicle, and the patient's life is risked in the attempt.

ARTICLE III.—*History of an Epidemic of Rötheln, with Observations on its Pathology.* By HENRY VEALE, M.D., Royal Artillery.

THE attention of the medical profession has occasionally been directed of late years to the occurrence of a peculiar form of eruptive disorder, which has certain points of resemblance both to measles and to scarlet fever, and which would appear to stand nosologically about midway between them. In Germany it has been regarded as a distinct disease, and has received the name of Rötheln. Amongst the English physicians who have written concerning it, Dr Richardson[1] is said to be of opinion that, although it simulates scarlet fever, it is really a different affection. He considers it to resemble scarlet fever in its tendency to produce renal disorder, but to be unlike that disease by being variable in its course, not contagious, and being probably excited by the irregular digestion of some particular forms of food. The name which he proposes for it is *Rosalia idiopathica.* The late Dr Babington,[2] speaking of the exanthem which he saw in London in 1864, describes it as a papular eruption, in many respects resembling measles, which "is ushered in during several days by constitutional disturbance, headache, loss of appetite, febricula, coryza, and sneezing. When the eruption appears," I continue the quotation, "the papules are less distinct than those of rubeola, are not arranged in crescentic clusters, and appear on the face and trunk, but not upon the upper or lower extremities, or at most very slightly. The general febrile symptoms are somewhat relieved by the external eruption, which is most vivid on the second day of its appearance, but does not entirely disappear until the third." From its general resemblance to measles, Dr Babington proposed to designate it *Rubeola notha.*

In thus referring to the descriptions of Drs Babington and Richardson, my object is to invite a comparison between the disease, or diseases, noticed by them, and an epidemic which I had an opportunity of observing a short time ago, and of which I shall endeavour to give some account on the present occasion. It occurred at Mount Aboo, a hill station in the Presidency of Bombay, and chiefly affected the children belonging to the school instituted by Sir H. Lawrence.

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[1] Half-Yearly Abstract of the Medical Sciences, vol. xli.

[2] Op. citat., p. 293.

I shall, in the first place, briefly describe a few of the cases which presented the disease in the most distinct form, or those to which I may have occasion to refer in the observations which I purpose to append.

CASE 1.—A. G., girl, æt. 12 years, was attacked on the 1st of March 1866 with slight coryza and febricula, and with an eruption on the face, arms, and body, very similar to that of measles. No cause whatever could be discovered to account for the rash. There was no measles in the neighbourhood, and so far as could be ascertained, there was nothing peculiar in the diet or habits of this child which could be assigned as the cause of the disease. She had previously been in excellent health, and had slept well the night before. Her bowels were regular, and her digestive powers were generally good. Moreover, it was found on inquiry that she had already had measles. On the following day there was neither coryza nor fever, and the eruption appeared on the legs, but was hardly perceptible on the face. On the third day the eruption was rapidly fading from the body; and on the day after, it had entirely disappeared. During the last two days there was no sign of any constitutional disorder.

CASE 2.—A. B., girl, æt. 13, attacked on the 20th of March with an eruption similar to that just described. There was, however, no derangement of the child's health, and the rash, after passing from the face to the feet, had disappeared at the end of the third day.

CASE 3.—J. C., boy, æt. 6. In this case the eruption made its appearance on the 6th of April, and was not attended with any constitutional disturbance. It passed from the face to the extremities and disappeared towards the end of the third day.

CASE 8.—H. S., boy, æt. 15, was seized on the morning of the 17th of April with slight coryza, feverishness, and pains in his limbs. Towards evening an eruption, similar to that observed in Case 1, appeared on his face. On the following morning the coryza and feverishness continued, and the rash affected his whole body. On the 19th, the feverish symptoms had left him, and the rash was fading rapidly. On the 20th, at 9 A.M., there was no trace of the eruption, and the boy was quite well.

CASE 9.—C. L., boy, æt. 12, attacked on the evening of the 18th of April with coryza, slight fever, pains in his limbs, and sore throat. On the next morning the rash appeared on his face, arms, and body, and there was slight swelling of the submaxillary glands and tonsils, with increased redness of the fauces. These symptoms decreased on the 20th and 21st, and had entirely disappeared, along with the eruption, on the 22d. I should add that he had but very little eruption on his lower extremities.

CASE 10.—G. G., boy, æt. 13, was seized with slight fever on the 18th of April at 3 P.M. On the following day, at 2 P.M., the eruption suddenly showed itself on his face. On the 20th, at 9 A.M., the eruption was visible on his face, body, and arms, and slightly on his legs. On the 21st, the fever was rapidly decreasing, but he had some tenderness, redness, and swelling of the fauces. On the 22d, at 3 P.M., he was quite free from eruption, fever, and sore throat, and seemed to be quite well.

CASE 11.—T. A., boy, æt. 15, was seized with slight fever on the evening of the 18th of April. On the 19th, at 7 A.M., he was still rather feverish; but towards evening all symptoms of fever left him. On the 20th, at daybreak, he observed a rash on his neck, arms, and body. On the 21st, it appeared on his legs, whilst it was fading from the body, etc. On the 23d of April, there was no trace of the eruption on his body; but it was still perceptible on his legs. On the 26th, it had entirely disappeared.

CASE 17.—T. J., boy, æt. 14. An eruption appeared suddenly on his face, body, and extremities, about 9 A.M. on the 20th of April. The submaxillary glands and tonsils were slightly swollen, and there was increased redness of the fauces, but there were no perceptible symptoms of fever or other constitutional derangement. On the 23d, the eruption and redness of the fauces had almost disappeared along with the swelling of the glands.

CASE 18.—C. S., boy, æt. 13. The eruption appeared on his face on the 20th of April, without any premonitory symptoms. On the 21st, it came out on his body also, and he had slight coryza with some swelling of the submaxillary glands, and a little tenderness of the fauces. On the 22d, all these symptoms were declining, and on the following day he was quite well.

CASE 19.—J. S., boy, æt. 8, was seized with nausea and vomiting at about 10 A.M. of the 21st of April. At noon, the eruption appeared on his face and body. Next day, the boy felt quite well, and the eruption had disappeared on the morning of the 24th.

The next six cases were of a very mild character.

CASE 26.—J. J., boy, æt. 16, is subject to slight attacks of malarious fever occasionally. Felt feverish on the 1st of May, also on the 3d, and again at 6 A.M. on the 4th, when he experienced some sickness at the stomach. Half an hour after this, having taken some exercise in the meantime, a copious papular eruption appeared on the face, body, and limbs. The submaxillary glands were slightly swollen, and tender on pressure; but there was no soreness of the throat. On the 5th, at 9 A.M., the eruption was less distinct. On the 6th, it was fading rapidly, and the tenderness of the submaxillary glands had ceased. On the 7th, he was quite well, and there was no trace of the eruption remaining.

All of the preceding cases occurred in the school; the following came under my notice in a private family:—

CASE 27.—A. B., a mild case, similar in all respects to No. 2.

CASE 28.—The same.

CASE 29.—H. A., girl, æt. 13. A slight eruption appeared on her face, without any premonitory symptoms, on the 5th of May. On the following day there was slight fever, and the rash extended to the body. On the 7th, the eruption was visible on the face, arms, and body, but not on the legs. It was of a bright scarlet colour, like that of scarlet fever, but papular, each papule having an areola whose tint was darkest towards the centre. The fever was decreasing. On the 8th, the eruption was less vivid; on the 9th, there was branny desquamation; on the 10th, all redness had disappeared as well as the fever. In this case there was no coryza, and only slight sneezing; nor was there any sore throat; yet, at the first sight, it might easily have been mistaken for scarlet fever. The convalescence was rapid and complete.

Case 30.—A. A., æt. 18, was attacked at the same time as the preceding, the eruption appearing on her face without any premonitory symptoms. On the second day it spread over the arms and body; on the third it was still visible; on the fourth it was fading rapidly; and on the fifth day there was not a trace of it remaining. In this case there was no coryza, nor was there any sore throat; and although there was a feeling of lassitude and weariness for two or three days, there was no actual fever. The rash bore a general resemblance to that of measles.

In order now to give a clearer conception of this disease as a whole, it will be necessary for me to describe the symptoms more in detail, and particularly the appearance of the rash. In some cases this was of a dusky red colour, similar to that of measles, whilst in others it was of a bright rose colour more like that of scarlet fever, and between these two extremes the hue varied without any perceptible cause. It was always distinctly papular, the elevation of the papules being appreciable even to the touch. As a rule the papules were distributed evenly over the surface, and were never seen in clusters of a crescentic or any other form. Their hue was most vivid on the first and second days, and when the face, body, arms, and legs were attacked in succession, the eruption faded in the same order, and was followed by more or less desquamation of the cuticle.

There did not appear to be any connexion between the colour of the rash and the existence of coryza or cynanche. In the case where the eruption most resembled that of scarlet fever, there was no throat affection; and, on the other hand, where there was the greatest amount of coryza, it did not always happen that the rash looked most like that of measles. Whilst it existed on the face there was often some sneezing, with suffusion of the conjunctivæ; but these symptoms never preceded the rash, nor were they accompanied by pain in the eyes, nose, or frontal sinuses, or followed by catarrh. When the throat was at all affected, there was generally some uneasiness in swallowing; but there was never any ulceration, nor did I observe the tongue to assume the "strawberry" aspect of scarlatina. In a few instances, there were nausea and a little vomiting before the eruption showed itself. These, however, were the only signs of gastric disorder. The heat of the body was never much increased, and certainly never to the extent that it is in scarlet fever, or even in measles. The convalescence was always rapid; and although circumstances did not admit of my making a chemical examination of the urine, I could perceive no signs of renal disorder. In none of the cases did I consider it necessary to have recourse to medicinal treatment, and I am not aware that the natural course of the disease was interfered with in a single instance.

In the following table, all the cases that came under my notice in the school are entered in the order of their occurrence, and their principal features, both positive and negative, are so arranged as to be easily available for reference.

No. of Case.	Initials.	Sex.	Age.	Date of Attack.	Measles.			Symptoms.			Duration of	
					Has had.	Has not had.	Doubtful.	Febricula.	Coryza.	Cynanche.	Premonitory stage.	Eruption.
			Yrs.	1866.							Hours.	Days.
1	A. G.	F.	12	Mar. 1	1	–	–	1	1	–	—	3
2	A. B.	F.	13	„ 20	1	–	–	–	–	–	—	3
3	J. C.	M.	6	April 6	–	1	–	–	–	–	—	3
4	L. S.	F.	9	„ 6	–	1	–	1	–	–	—	3
5	J. C.	F.	10	„ 6	1	–	–	–	–	–	—	3
6	C. C.	F.	11	„ 6	1	–	–	–	–	–	—	3
7	K. S.	F.	8	„ 8	–	1	–	–	–	–	—	2
8	H. S.	M.	15	„ 17	1	–	–	1	1	–	12	2 to 3
9	C. L.	M.	12	„ 18	1	–	–	1	1	1	12	3
10	G. G.	M.	13	„ 18	1	–	–	1	1	1	23	2 to 3
11	T. A.	M.	15	„ 18	–	–	1	1	–	–	24 to 36	6
12	K. H.	F.	11	„ 19	–	–	1	–	–	–	—	3
13	H. H.	M.	12	„ 19	1	–	–	–	–	–	—	3
14	J. C.	M.	9	„ 19	1	–	–	–	–	–	—	3
15	W. H.	M.	6	„ 20	–	–	1	–	–	–	—	2
16	J. S.	M.	6	„ 20	–	1	–	–	–	–	—	2
17	T. J.	M.	14	„ 20	1	–	–	–	–	1	—	3 to 4
18	C. S.	M.	13	„ 20	1	–	–	–	1	1	—	3
19	J. S.	M.	6	„ 21	–	1	–	–	–	–	2	3
20	J. L.	M.	9	„ 21	–	–	1	–	–	–	—	2
21	A. C.	F.	15	„ 21	–	1	–	–	–	–	—	3
22	G. M.	F.	8	„ 21	–	1	–	–	–	–	—	3
23	A. C.	M.	6	„ 22	–	–	1	–	–	–	—	3
24	R. H.	M.	15	„ 22	1	–	–	–	–	–	—	3
25	P. C.	M.	11	„ 24	1	–	–	–	–	–	—	3
26	J. J.	M.	16	May 4	–	1	–	–	–	–	1	2 to 3
27	B. A.	F.	4	April 19	–	1	–	–	–	–	—	3
28	P. A.	M.	6	„ 19	–	1	–	–	–	–	—	3
29	H. A.	F.	13	May 5	–	1	–	1	–	–	—	4
30	A. A.	F.	18	„ 5	–	1	–	–	–	–	—	4

Whilst this epidemic lasted, the average number of children in the school was sixty, of whom nearly one-half were attacked. As a rule, the boys are kept as separate from the girls as possible;

still, a certain amount of intercommunication in the school is unavoidable, and it is possible that one child may thus have caught the disease from another, accidentally, as it were; but a careful consideration of the circumstances which I shall now narrate, will be more likely to lead to the conclusion that it did not spread exactly in that way. The first case, as I have already mentioned, occurred on the 1st of March, in a girl. She was at once placed in a separate room, and was thus isolated for a week, after which she returned to the school. On the 20th of March, the second case appeared, in a girl who occupied, in the common dormitory, the bed lying next but one to that which the first girl returned to. In this case isolation as before was not attempted; the girl was merely confined to her bed for three or four days. However, no other cases followed until the 6th of April, when four children were attacked simultaneously; and of these, three were girls who occupied the beds lying nearest to that of the girl seized on the 20th of March. The fourth child was a little boy, æt. 6, a brother of one of these girls, who lived and slept on the girls' side, but who, from local circumstances, was permitted to pass from one side to the other whenever he pleased, and who thus associated with the other boys whilst the rash was upon him. Exactly eleven days after the commencement of his attack a case occurred on the boys' side. On the day following, viz., on the 18th of April, three more boys were affected; on the 19th, three more; on the 20th, four; on the 21st, two; on the 22d, two; and on the 24th, one. After this there was an interval of ten days, and then another case, No. 26, occurred amongst the boys. On making inquiries, it was found that this boy slept in one of the smaller rooms of the establishment, along with H. S., No. 8, and R. H., No. 24, who were attacked, the former on the 17th, the latter on the 22d of April. During this time, on the girls' side, one case occurred on the 8th of April; one on the 19th; and two on the 21st.

I have been quite unable to discover in what way the first case originated. I could not trace it to any peculiarity in the diet, drink, clothing, or indeed any other circumstance. There was no measles nor scarlet fever in the neighbourhood, so far as I could learn, nor was any similar disease prevalent amongst the natives of the adjacent bazaar. But this does not exclude the possibility of the disease having been imported from one of the surrounding villages in some manner, perhaps simple enough, only not detected. Except on the hypothesis of its being contagious, it would be equally impossible to account for the extension of the disorder; but if we accept this view, the explanation becomes easy, and the cases can be divided into separate groups, thus,—*a*, Case No. 1, source unknown; *b*, Case No. 2, infected by No. 1; *c*, Nos. 3, 4, 5, 6, and 7, infected by No. 2; *d*, from No. 3, all the boys from No. 8 to No. 25 inclusive caught the disease; *e*, from one of the group *c* originated the remaining cases amongst the girls; *f*, finally, No. 26 caught the disease either from No. 8 or No. 24.

The cases which occurred in the private family already alluded to, will also tend, I think, to show that the disease was contagious. On the 7th of April, five of the school girls spent the afternoon with this family; and, amongst the five, were the two girls who had already had the disease, and a sister of the little boy, No. 3, upon whom, as I have already related, the eruption had appeared on the previous day. Now, on the twelfth day after this, viz., on the 19th of April, two children in this family were attacked; and then, after an interval of sixteen days, other two of its members suffered.

There is so much difficulty always attendant upon investigations into the properties and effects of morbid poisons, that we can scarcely wonder if considerable obscurity still surrounds the subject of contagion. Much light has been thrown upon it, however, of late years, by those who have experimented upon the inoculation of syphilis and other eruptive diseases; and the opinion may now be safely held, that there are periods in the course of the inoculable and contagious diseases when their morbid poisons are more active and more abundant than at others; and that there are, likewise, certain periods when their rate of elimination is greater than ordinary; and hence one might not unreasonably infer the probability of these diseases being influenced, as to severity, by the states of the poisons producing them. It has been frequently noticed, for example, in reference to vaccination, that the virus produced on the seventh day is more active than that produced on the eighth; that on the eighth than that on the ninth; and so on; and, in practice, one may raise the standard, so to speak, of the vaccine vesicle, by taking advantage of this circumstance. Moreover, it is a matter of common observation, that in nearly all epidemics the worst cases generally occur immediately after the outbreak, and that the disease gradually grows less severe.

It may also be regarded as almost certain that some morbid poisons, those of syphilis and rabies, for instance, exist only in the fluid state; whilst others, like those of measles, scarlet fever, etc., are always aëriform*: certain others again, such as that of smallpox, being capable of assuming either condition; and, with respect to their elimination from the body, there would seem to be a certain relation between the facility with which this process is effected, and the contagiousness of the disease. The marsh poison, for instance, clings to the system with extreme pertinacity; and if ever eliminated, is probably first decomposed and rendered inert. The diseases which it produces are, therefore, not contagious; but that they would be so if their poision were eliminable, as such, cannot for a moment be doubted. The contagiousness of diseases may, then, be said to be in direct ratio with the virulence of their specific poisons and the extent to which these are eliminated, as such, from the body; and if this be admitted, it must be of great importance to determine at what periods such poisons attain their maxima of intensity and abundance. I have already expressed my belief that,

* This statement is incorrect.

in the case of cow-pox, the virus is most active rather before the eighth day. I also incline to the opinion that, in smallpox, the virulence of the poison is greatest just before the maturation of the pustules; and in measles, scarlet fever, and the like, during the period which precedes the decadence of the eruption. The quantity, however, is probably greatest whilst the processes of scabbing and desquamation are going on.

I am not aware that any one has hitherto succeeded in determining how long the eliminative period may last, or how long the various morbid poisons may retain their subtle power; but the circumstances connected with the introduction of smallpox into Australia, of scarlet fever into Madras, and with the transmission of yellow fever, point to the conclusion that although some morbid poisons are longer lived than others, they are all more persistent than we frequently imagine. It is possible, also, that their eliminative periods are of longer duration than we have been in the habit of believing. There is no reason, however, for supposing any disease to be contagious during its period of incubation, as the following case may show. A child was vaccinated on the 11th of February. On the 18th, from the only pustule that had formed another child was vaccinated. On the 22d, the first child was seized with convulsions and fever; and on the night of the 24th, the eruption of smallpox began to appear on its face. After this, the second child was carefully examined and watched; but, notwithstanding that the vaccination was successful, no sign of smallpox could be detected either then or subsequently. Hence it may be concluded, that on the eighth day of incubation the poison was not being ejected by the skin.

It is, moreover, hardly probable that a disease is contagious during the febrile stage, which precedes the eruptive; but the proof of this proposition, being less direct, would necessitate a longer digression than I am now at liberty to make.

Returning now to the disease specially under consideration, I shall next endeavour to determine its period of incubation, taking the hypothesis of its contagiousness for granted. It will be remembered that the school-girl in whom the eruption was first seen was kept apart from her fellows for a week, and that the second case occurred twelve days after her return to the common dormitory. Hence it would appear that the disease was communicable on the eighth day after the outbreak of the rash, and that the period of incubation could not have exceeded twelve days, but it is evident that if the disease be contagious still later than on the eighth day, so may the incubative period be less. From the group of cases which occurred on the 6th and 8th of April, nothing positive can be deduced, except that the period of incubation may have extended to sixteen and eighteen days; but this is hardly probable, because, although there was no positive isolation in the second case, the girl was kept in bed for three days, and only mixed freely with her fellows on the fourth. However, there would be no difficulty in admitting that the incubative period may have been twelve days in this group. There can be little doubt, I imagine, but that the little boy, Case No. 3, carried the disease to the other boys; and as only eleven days elapsed from the appearance of the eruption upon him, until the first case on the boys' side occurred, we must regard the period of incubation as being, in this instance, eleven days at the most, and even then the disease must have been communicated on the first day of the eruption. From the fact, however, that only one case happened so soon, it is possible that it may have been somewhat exceptional. As regards the cases which immediately followed, it is impossible to ascertain their period of incubation because their date of infection cannot be determined. Still, if we suppose twelve days to be the normal period, it would appear that three were infected on the first day of the eruption, three on the second, four on the third, four on the fourth, two on the fifth, and one on the seventh; and thus the third and fourth days of the eruption would seem to be the period when the chance of infection is greatest. In the case of No. 26, it will be admitted as most probable that the lad caught the disease from one of the boys who slept in the small room with him, either No. 8 or No. 24. If he were infected by the former, the incubation might have lasted as much as sixteen days; if by the latter, it could not exceed ten. But if we look to what happened in the private family above mentioned, and suppose the infection to have been conveyed by one of the school-children on the 7th of April, the incubative period would be fixed at twelve days for the first two cases, Nos. 27 and 28; but as regards Nos. 29 and 30, nothing would appear certain except that it could not have exceeded sixteen days. However, as we have seen reason to believe that the chance of infection is greatest on the fourth day of the eruption, if we suppose them to have caught the disease on that day, there would be exactly twelve days left for incubation.

In confirmation of the opinion previously expressed relative to the possibility of the contagious diseases being rendered more or less virulent, according to the periods when the morbid poisons which produced them may have been generated or eliminated, I may refer to what took place in this epidemic; but I must first state that the notes from which the preceding table of cases was compiled were made quite independently of any theories whatsoever, and that it has only recently occurred to me to ascertain their bearing upon this particular point. On examining the table, then, it will be seen that in the first case there were both fever and coryza; whereas, in the second, there were no symptoms of constitutional disorder. How the first case originated I am unable to state, but I have shown reason for believing that the second was caused by the poison eliminated at a late period of the disease. In the next series, the cases (Nos. 3 to 7 inclusive) were probably produced by the poison eliminated at the middle period; and they were all of a mild description. But the group immediately succeeding were infected, there can be little doubt, at the earliest eliminative period, and it will be observed that they were not only more severe than any of the others, but characterized by a more marked premonitory stage. The last cases that occurred were again comparatively mild.

From the fact that so many children were attacked who were ascertained to have already had measles, it is clear that this affection could not have been measles. It is almost as certain that it was not scarlet fever; because, although they had none of them had it, this disease, I believe, has never been seen in the Bombay Presidency. There are sufficient points of distinction, however, between these three diseases, as the following contrast will make abundantly clear:—

Disease.	Period of Incubation.	Eruption appears.	Eruption fades.	Character of Eruption.	Coryza and Catarrh.	Sore Throat.
MEASLES.	10 to 14 days.	On 4th day of fever.	On 7th day of fever.	Papular, but more or less crescentic, affecting the whole body, and followed by desquamation of the cuticle.	Common.	Uncommon.
SCARLET FEVER.	4 to 8 days.	On 2d day of fever.	On 5th day of fever.	General efflorescence without distinct papules, affecting the body and the flexor surfaces of the limbs chiefly, followed by desquamation and exfoliation of the cuticle.	Uncommon.	Common.
RÖTHELN.	10 to 12 days.	On 1st day.	On 3d day.	Papular, but not crescentic, affecting the body, and the extremities in a less degree; occasionally succeeded by slight desquamation.	Coryza occasional; Catarrh uncommon.	Occasional.

I much regret that I have not the means in this distant region of consulting the original papers of Drs Babington and Richardson, so as to be able to distinguish more clearly the principal features of the diseases described by them. I am inclined, however, to think that the epidemic which I have endeavoured to portray differs from that noticed by Dr Babington only in degree; and that the variation in the symptoms may have been attributable to the difference of climate. But I am quite unable to reconcile Dr Richardson's views with the description given by Dr Babington, or with what has come under my own observation. Nor can I agree with Dr Richardson with reference to the etiology of the disease. The only evidence that I have been able to obtain is of a purely negative kind, and I am forced to the conclusion that the disorder is produced by a specific morbid poison, whose origin is at present as obscure as that of the views of smallpox.

The name of a disease is always a matter of some importance. It should be short for the sake of convenience in writing, and euphonious for ease in pronunciation. It should, if possible, be capable of serving only as a sign, or mark, whereby to indicate a definite group of pathological conditions, and it should not be a "question-begging appellative." *Rötheln* is harsh and foreign to our ears. *Rubeola notha*, and *Rosalia idiopathica* are too long for general use, and are certainly expressive of conclusions which have yet to be proved. I therefore venture to propose Rubella as a substitute for Rötheln, or, at any rate, as a name for the disease which it has been my object in this paper to describe.

ARTICLE IV.—*The Modern Treatment of Pneumonia in Young Children, with some Observations on the Initial Auscultatory Sign of the Disease.* By G. STEVENSON SMITH, L.R.C.S.E., formerly Resident Medical Officer, Royal Edinburgh Hospital for Sick Children.

AT the present time, when the treatment of pneumonia is exciting so much discussion, it has occurred to me that a brief account of the plan pursued amongst young patients suffering from that disease in the Children's Hospital here might not be altogether uninteresting or unprofitable.

Before entering upon the subject of treatment, however, I may take this opportunity of making a few remarks in regard to the diagnosis of pneumonia in its earliest stage. Most of the cases when brought into hospital are of too long standing to enable us to make out correctly what the initial auscultatory symptom really is; but I have had the good fortune to meet with two cases in which I was able to determine, with the greatest certainty, that a harsh respiratory murmur preceded crepitation. This harshness or puerility of the respiration was long since pointed out by Dr Stokes as a phenomenon that preceded the crepitating rale, and the correctness of his observation has been confirmed by Dr Waters and others. But as a considerable amount of scepticism still exists on this point, and as M. Grisolle, who is no mean authority, states that in all his experience he has never met with a case in which the pneumonic crepitation was ushered in by abnormal harshness of the respiration, it may be as well to give the following notes of the cases which were made by myself at the time, and are now extracted from the hospital case-book:—

CASE 1.—J. G., æt. 2½ years, had not been very well for about a fortnight, and suffered from catarrh. On account of the breathing having become hurried, and the skin hot, she was brought by her mother to the Hospital on the 13th of November 1865. On admission, the child was pale, respiration quick and panting, pulse rapid, dry hot skin, and loaded tongue. There was an occasional short cough. On auscultating the chest, nothing abnormal could be detected, saving *an unusually loud and harsh respiratory murmur* over the posterior surface of both lungs. The percussion note was very slightly dull over the lower third of the left lung posteriorly. To overcome the high fever which existed very small doses of digitalis and dilute nitric acid were prescribed, and the patient was packed in the wet sheet.

She continued in a very feverish state, with loud harsh respiration, and a little dulness over the lower portion of the left lung till the 17th, when *true pneumonic crepitation was heard over the lower two-thirds of the left lung posteriorly.* On the same day the harsh respiration over the right lung still persisted, and there was an occasional rhonchus. On the following day, the 18th, there were crepitation and tubular breathing over the left lung, with dulness on percussion; and there was also *crepitation over the upper third of the right lung,* and slight dulness on percussion. On the 19th, crepitation was more general over the right side; and on the 20th, the breathing in that lung was tubular and crepitating. Bronchial breathing lasted for a few days, and on the 25th, returning crepitation was detected over the left lung. Slight dulness of the lower portions of both lungs remained for some time, but the little patient made a good recovery.

CASE 2.—R. H., æt. 4, admitted 10th October 1865, had been feverish and out of sorts for some days; and on admission, his skin was hot, pulse high, breathing hurried, tongue red. He coughed slightly every now and then. On auscultating the chest, *very harsh respiration* was heard over both sides, and percussion revealed slight dulness of the lower portion of the right lung posteriorly. Two days after his admission, on the 12th, *fine pneumonic crepitation* was detected over the lower two-thirds of both lungs behind, and the percussion sounds were dull in the same region. Patient passed through the various stages of the disease; but it is not necessary to give any further details. He made an excellent recovery.

Here, then, are two cases in both of which a harshness or puerility of the respiratory murmur was without doubt the precursor of the crepitating rale. Whether this is the first recognisable sign of pneumonic inflammation in all cases I cannot tell, but that it might be much more frequently detected there can scarcely be any doubt, had practitioners an opportunity of auscultating the chest at a sufficiently early period in the disease.

But the chief object of this paper is to give an account of the treatment usually adopted by the physicians to the Children's

Hospital in cases of inflammation of the lungs, and I shall first give a sketch of the plan, and afterwards inquire into its success as shown by the results.

In all cases of acute pneumonia, the degree of fever, the strength of the patient as ascertained by the state of the pulse, and the extent of the disease, are taken into account before any remedy is prescribed. If the disease is in its first stage, and the fever is high, and especially if the pulse is good, small doses of antimonial and ipecacuanha wines, with the aqua acetatis ammoniæ and syrup are ordered; five or more drops of each of the wines according to the age, being given every three hours. Occasionally, small doses of dilute nitric acid and tincture of digitalis are given. But in the greater number of cases admitted, it is found that even this very mild treatment is too active, the little patients being in such a prostrated condition as to require stimulants and good nourishment from the first. In such circumstances, a mixture of spiritus ammon. arom. with sweet spirits of nitre is prescribed, along with a dessertspoonful of wine every three hours, and plenty of milk and good beef-tea. But in all cases the diet is liberal, the patient being generally allowed to take anything in the way of fluid nourishment he may prefer. In the pneumonia of young children it is unusual to have a great amount of coughing, but when an irritable cough does annoy the patient, a few grains of hydrarg. c. creta and Dover's powder generally act like a charm.

In every case during the continuance of the acute symptoms, warm water fomentations are constantly applied all round the chest, and give great comfort, and if there is much dyspnœa, afford great relief to the child. The best way of applying the fomentation is to have a flannel bandage of sufficient length and breadth to go round and cover the whole of the chest, wrung out of hot water and applied; then, on the outside of it a roller of Mackintosh waterproof-cloth is put, care being taken to have the Mackintosh sufficiently large to cover the flannel entirely. By this means the flannel is kept moist and warm for a considerable time, and the whole chest is surrounded by a warm moist vapour. This method will be found to be quite as beneficial as poulticing, while it is far less troublesome and much better liked by the child.

As a rule, this is all the treatment that is found to be necessary in the acute stage. *Since the hospital was opened, some six years ago, not a single drop of blood has ever been taken from a pneumonia patient.* In the more advanced stages of the disease, the application of the liniment. croton. tig., or the brushing on of the tinct. of iodine, is sometimes found to be beneficial in promoting the absorption of the inflammatory products.

During convalescence, a ferruginous tonic with cod-liver oil is usually prescribed.

From this short outline it will be apparent that the practice followed is essentially restorative, in the sense that no remedies are used which may depress the patient's powers, while a liberal amount of nourishment is given, with wine, if necessary, from the very first. But it will also be observed that each case is treated according to its own peculiar characteristics, and not upon general principles merely. If the disease is very acute, and the child has previously been robust, small doses of antimony and ipecacuanha are given, and their effects are carefully watched. If, on the other hand, as is most frequently the case, the pulse is small and compressible, and the child has little vital energy, nature's efforts to bear up till the force of the disease has spent itself, are aided by the administration of stimulants, the aromatic spirit of ammonia, and the like.

It is plain, therefore, that although neither depletion nor depression is had recourse to, the treatment is nevertheless very different from a merely expectorant or do-nothing method, recommended by some physicians, and which is apparently based on the belief that inflammation of the lung coming on in children previously healthy terminates generally in recovery. But although it is now admitted that almost all the acute affections of early life have a tendency to end in recovery, surely that is no reason why the physician should stand idly by, and refuse to aid, as he often may do most effectually, the efforts of nature to overcome disease.

It has already been stated that bleeding is never had recourse to in cases of pneumonia occurring here, and I am glad to see that in the recent edition of Dr West's Lectures on the Diseases of Infancy and Childhood, that distinguished physician, to whom the profession is greatly indebted, has very considerably modified his opinions as to the efficacy of such a measure in the treatment of this disease. For, whereas he formerly stated that, "In the management of cases of idiopathic pneumonia occurring in previously healthy children, whatever be their age, *depletion* is as important a remedy as in the adult," and recommended that, "in a healthy child of four years old a vein may be opened in the arm, and ℥iv. of blood allowed to flow;" and further, "How great soever may have been the relief which followed the first bleeding, it is not always permanent; and hence the child should be seen again in from six to eight hours; and if the symptoms appear to be returning with anything of their former severity *depletion must be repeated*"—(fourth edition); he, now, in the last edition of his work, at page 322, remarks, "I am struck by the different conclusions to which five and twenty years of the practice of my profession have led me, from those which I adopted at the outset of my career. It is I believe but rarely, at the present day, that depletion is indicated in bronchitis or pneumonia; and tartar emetic needs to be given more sparingly than in former years, and acts with less certainty in cutting short at its very outset the inflammatory action."

In thus frankly confessing the change which has taken place in his opinions, Dr West remarks, "When looking back on the records of cases where I abstracted blood freely, and gave antimony in large doses, I cannot admit that my practice then was a mistaken one, that the recoveries which then took place were the result of accident, or that, in counselling now a different course, I am merely following the fashion or the prejudices of the age."

Whatever may be the nature of the influences which have so operated upon the minds of medical men as to have led them to change their opinions and their practice in the management of inflammatory disease; whether the type of disease or the constitution of the patient has changed; whether it be the result of improvement in the method of diagnosis, or merely as some hold the result of empiricism, it is certain that now-a-days there is a mighty difference in the treatment of pneumonia as compared with that of former years. And I have no hesitation in saying that the plan pursued at the Edinburgh Children's Hospital will be found to be all that is necessary in the majority of acute uncomplicated cases to conduct the malady to a favourable termination.

I would now call attention to the following table, which exhibits the results of the mode of treatment described, and also gives particulars as to the age, sex, extent of the disease, and the length of stay of each patient in the hospital, in twenty-four cases of pneumonia, fifteen of which were simple, and nine complicated with other diseases.

This is not a large number certainly, but they all occurred during my residence in the hospital, and as each case was under my daily observation, I can vouch for the accuracy of every particular.

Of the 15 simple cases, 10 were double; in 3 the right lung alone was affected; the left in 2.

Ten of the patients were males, 5 females.

None of them exceeded 10 years of age, while the average of the whole is about 5 years. The average residence in the hospital of each of the patients is 25 days, but it is right to mention that unless there is any great demand for beds, many of the children are allowed to remain for some time after they are really convalescent. Of the 15 cases, 14 recovered and were dismissed in good health, while 1 died. The patient who died was not brought to the hospital till the disease was far advanced, and the child was greatly prostrated.

Of the 9 complicated cases 7 were double; 1 had the right lung only affected; and 1 the left lung.

In 2 the pneumonia was associated with hooping cough; in 1 with measles; in 1 with measles and nephritis; in 1 with albuminous dropsy; in 1 with pleurisy and nephritis; in 1 with chronic albuminuria; in 1 with mitral disease; and in another with pus and albumen in the urine.

Four of the patients were males, and 5 females.

The oldest was 7, the youngest 2, the average between 3 and 4 years. The average duration of residence is 32 days.

Of the 9 patients, 5 recovered, 2 were taken away by the parents while still under treatment, and 2 died.

In the 2 cases which proved fatal both lungs were implicated, and in one of them there was extensive pleurisy and nephritis; while the other had, besides the pneumonia, both measles and nephritis. The kidney affection came on after scarlatina in the one case, and in the other its presence was detected the day before the child died. In both instances, the urine was highly albuminous, and contained tube casts.

With such serious complications, a fatal result cannot be wondered at; for with the blood poisoned primarily by scarlatina and measles, and secondarily by the retention of those morbid matters which the diseased renal organs failed to eliminate from the system, nature and medicine had to fight against fearful odds.

Table of 24 *Cases of Pneumonia treated at the Royal Edinburgh Hospital for Sick Children from December* 1864 *till February* 1866.

15 SIMPLE CASES.

Age.	Sex.	Single or Double	No. of days in Hospital.	Result.	Age.	Sex.	Single or Double.	No. of days in Hospital	Result.
2¾	M.	Right,	15	Recovered.	6	F.	Double,	22	Recovered.
2	M.	Double,	24	Do.	8	M.	Do.	27	Do.
3	M.	Do.	20	Do.	8	M.	Do.	34	Do.
3	F.	Do.	11	Died.	10	M.	Right,	29	Do.
3⅓	M.	Left,	12	Recovered.	10	F.	Double,	35	Do.
4	M.	Double,	27	Do.	10	F.	Do.	31	Do.
5	F.	Right,	29	Do.	3	M.	Do.	43	Do.
5	M.	Left,	18	Do.					

9 COMPLICATED CASES.

Age.	Sex.	Single or Double.	No. of days in Hospital.	Nature of the Complication.	Result.
2	M.	Right,	41	Hooping-cough, . .	Recovered.
2⅔	F.	Double,	25	Album. and puru. urine,	Do.
3	M.	Do.	44	Hooping-cough, . .	Taken away.
3	F.	Do.	18	Measles, ...	Do.
3	M.	Do.	9	Pleurisy and nephritis, .	Died.
4	M.	Do.	29	Albuminuria, . .	Recovered.
4	F.	Do.	28	Measles and nephritis, .	Died.
4½	F.	Left,	69	Albuminous dropsy, .	Recovered.
7	F.	Double,	28	Mitral obstruction, .	Do.

But by a very careful examination of the hospital records, I find that, besides the cases just enumerated, and which, as I before remarked, all occurred during my term of office as house surgeon, there have been 74 cases of pneumonia treated in the hospital since its opening in February 1860. Of these, 54 were simple, and 20 complicated. The extent of the disease in each case has not always been stated, but I find that in a great number of the simple cases both lungs were involved. In other respects, the statistics may be relied upon as being strictly correct.

Table of 74 *Cases of Pneumonia treated at the Hospital from February* 1860 *till November* 1864.

54 SIMPLE CASES.

Age.	Sex.	No. of days in Hospital.	Result.	Age.	Sex.	No. of days in Hospital.	Result.
2	F.	12	Recovered.	5	F.	26	Recovered.
2	F.	4	Died.	5	M.	41	Do.
2	M.	27	Do.	5	F.	31	Do.
2	F.	8	Do.	5	F.	23	Do.
2½	F.	143	Recovered.	6	F.	28	Do.
2½	M.	10	Do.	6	F.	26	Do.
2½	F.	18	Do.	6	M.	37	Do.
2½	M.	21	Died.	6	F.	50	Do.
2½	F.	101	Recovered.	6	M.	81	Do.
2½	M.	2	Died.	6	F.	24	Do.
3	M.	16	Recovered.	7	F.	33	Do.
3	F.	20	Do.	7	F.	9	Do.
3	M.	61	Do.	7	M.	29	Do.
3	F.	20	Do.	7	M.	23	Do.
3	M.	11	Do.	8	M.	10	Do.
3	F.	12	Died.	8	M.	20	Do.
3½	M.	20	Recovered.	8	F.	21	Do.
4	F.	37	Do.	8	M.	31	Do.
4	F.	65	Do.	8	F.	66	Do.
4	M.	21	Do.	8	M.	20	Do.
4	M.	24	Do.	8	M.	16	Do.
4	M.	24	Do.	9	F.	15	Do.
4	M.	25	Do.	9	M.	21	Do.
4	F.	24	Do.	9	F.	29	Do.
5	F.	131	Do.	10	M.	28	Do.
5	M.	11	Do.	10	M.	12	Do.
5	M.	79	Do.	11	F.	94	Do.

20 COMPLICATED CASES.

Age.	Sex.	No. of days in Hospital.	Nature of the Complication.	Result.
1½	F.	1	Stomatitis, . . .	Died.
2	F.	8	Hooping-cough, . .	Recovered.
2	M.	63	Hydro-thorax, . .	Do.
2	F.	10	Anasarca, . . .	Died.
2½	M.	59	Phthisis, . . .	Do.
3	M.	41	Scarlatina, . . .	Recovered.
3	M.	10	Uræmic convulsions, .	Died.
4	F.	43	Hooping-cough, . .	Recovered.
4	M.	21	Measles, . . .	Do.
4	M.	10	Hooping-cough, . .	Died.
4	M.	47	Phthisis, . . .	Do.
5	M.	32	Hooping-cough, . .	Recovered.
6	F.	29	Do. . . .	Do.
6	M.	21	Measles, . . .	Died.
7	F.	20	Do.	Recovered.
7	F.	27	Phthisis and Meningitis, .	Died.
7	M.	40	Tuberculosis, . . .	Taken away.
7	M.	21	Psoriasis, etc., . .	Died.
9	F.	108	Typhus, ...	Recovered.
	M.	36	Typhoid, . . .	Do.

The preceding table shows that of the 54 simple cases one-half were males, and the other half females. The average age was about 5 years, the oldest being 11, the youngest 2.

The average length of residence in the hospital was about 33 days; but, as I said before, children are frequently kept longer in the hospital than is absolutely required, in order that convalescence may be thoroughly established before sending them to their homes.

Out of the 54 no fewer than 48 are entered in the books as having been dismissed recovered, while only 6 died. Of the fatal cases, 1 was admitted in a dying state, and another was only four days in the hospital.

Then, in regard to the 20 complicated cases, it will be observed that 12 were males and 8 females. The average age was about 4½ years, the oldest being 9, the youngest 1½.

The average period of residence was 32 days.

5 of the cases were complicated with hooping-cough; 3 with measles; 2 with phthisis; 1 with phthisis and meningitis; 1 with scarlatina; 1 with typhus; 1 with typhoid fever; 1 with hydrothorax; 1 with uræmic convulsions; 1 with tuberculosis; 1 with stomatitis; 1 with anasarca; and 1 with psoriasis indicating some dyscrasia. 10 recovered, 1 was taken away while still under treatment, and 9 died. One of the fatal cases was only in the house for a single day.

A study of these statistics yields the following information.

From the month of February 1860, the date of the opening of this hospital, till the month of February 1866, the total number of cases of pneumonia recorded in the books is 98.

69 were cases of simple, uncomplicated pneumonia, while 29 were complicated with other diseases, such as phthisis, typhus and typhoid fever, nephritis, measles, etc.

Of the Simple or Uncomplicated Cases.

Age.—The average age is a trifle over 5 years. And most authorities agree that it is during the first 5 years of their life that children are most likely to suffer from pneumonia.

Sex.—Rilliet and Barthez found that boys were more frequently attacked with inflammation of the lungs than girls, and that cases of primary or idiopathic pneumonia were much more common amongst the former. An examination of the cases treated at this hospital shows that of the 69 simple cases 37 were boys and 32 girls, thus giving a small majority to the males.

Mortality.—62 of the patients recovered, and 7 of them died. But in order to make a correct calculation as to the proportion of deaths, it ought to be mentioned that one of the cases which had a fatal termination is stated in the books to have been admitted in a dying state, and was only in the hospital for a day and a half. As this patient cannot be said to have been treated, we are quite justified in deducting it from the number of deaths. This leaves us 6 deaths in 69 cases, or 1 in 11½ cases, equal to between 8 and 9 per cent., which, considering the very early age of many of the patients, and the extent of the disease in some, must be regarded as a very small mortality indeed. It must be remembered, that in this calculation I do not include 10 cases which were complicated with other diseases and recovered, else the mortality would be still smaller. I think it is fairer and more correct to separate the simple from the complicated cases entirely.

Of the Complicated Cases.

Age.—The average age is about 4 years.

Sex.—Here, again, the males predominate; for, out of the 29 cases, 16 were boys, 13 girls.

Mortality.—The number of deaths is necessarily high, 11 of the 29 having terminated fatally. But here, again, it should be noted that one of the fatal cases was scarcely a whole day in the hospital.

It will thus be seen, that in the young child simple uncomplicated pneumonia, when treated in the manner I have indicated, without depletion or any other lowering measure, is by no means a very fatal disease. Dr Bennett has shown by statistics, the accuracy of which no amount of quibbling can affect, that in the adult, uncomplicated pneumonia, when treated according to what he calls the restorative plan, almost always ends in recovery. And it will be observed that the treatment here described is very much the same as what he recommends.

ARTICLE V.—*Aphasia and Death resulting from Softening in Left Anterior Cerebral Lobe and Cerebellum, due to Atheromatous Degeneration and Embolism of the Cerebral Arteries.* By J. FAYRER, M.D., Professor of Surgery, Medical College, Calcutta.

THE following very interesting case appears to corroborate the views recently advanced by certain pathologists as to the cause of loss of power of speech, or of the memory of words; it is also very remarkable as an example of cerebral softening, at a comparatively early age, from atheromatous degeneration of the vessels of the brain, with embolism of the basilar artery. I therefore give the notes I made of it, before and after death, in detail.

I have known Mr —— for several years, and until three years ago his general health was good; he is about 42 years of age, of a nervous, excitable temperament, and of energetic and active habits of mind and body. About three and a-half years ago he consulted me concerning one or two sores on the leg, which were of a suspicious character, and which he seemed to consider might owe their peculiarity, if not their origin, to a constitutional taint; if so, the disease must have been contracted in early youth, for he denies the possibility of any infection for many years. His habits and mode of life have been temperate and active, his occupation necessarily exposing him to frequent change of station, with much of his time spent in the open air. I did not attach so much importance to the sores as he did; they readily healed to rest and simple applications. But I prescribed iodide of potassium, with reference to the possible specific origin. In September 1863, I was informed that he had been attacked, suddenly, with hemiplegia of the right side.

He had, apparently, no warning; the attack occurred during the day, when he was talking to some one. He appears for a time to have lost all power in the right side, though he retained consciousness, but this paralysis was not of very long duration. He recovered partially, and subsequently regained power in his limbs; his speech improved, though some thickness, slight difficulty of articulating certain words, and a quick and excited mode of speaking remained. He was most judiciously treated; no depletion was had recourse to, and his powers were husbanded as much as possible.

In 1864, he went home to England, round the Cape, and on the voyage he appears to have been subjected to much anxiety and excitement from the danger to which the ship was exposed in a gale of wind, which required that she should be taken into port in the Mauritius and there detained for some weeks. It does not appear, however, that he suffered from this exposure; on the contrary, his health and strength improved with the change, and the improvement was further confirmed during his residence of fifteen months in England. He returned to India in June 1865, and I saw him soon after his arrival; he looked well, and all traces of hemiplegia, so far as the limbs were concerned, had passed away. His voice, however, was still slightly affected; there was an indistinctness in the articulation of certain words; there was also an unnatural rapidity of utterance. His intellect seemed perfect, and he resumed his appointment. As the hot weather came on, he appears to have begun to fail; his memory became defective, his manner excited, and his speech more rapid and uncertain. There was a tendency to forget, or to substitute words, and his intellectual powers, naturally great and much developed by scientific and literary study, showed signs of failing.

On one occasion I was asked to see him when he was in Calcutta, and I found his manner excited, his speech quick and somewhat indistinct. His memory was evidently on the strain, and though I could see no absolute indication of the original disease returning, it was evident that some permanent defect remained, which, under the excitement of heat and duty, was becoming more marked, and indicated that cerebral change (whether dynamical or structural was uncertain) was at work.

23*d March.*—A few weeks ago, I heard an unfavourable report of him; there were no details beyond the fact that his memory was altogether gone. On the 8th of April, I was asked to see him here;

he had been sent in from ——— on his way home. The accompanying statement of his case was subsequently forwarded by the medical officer who had seen him during his last attack; and it clearly explains what happened shortly before he came to Calcutta.

"Mr ——, aged 42 years, has been in India fourteen years.

"On the 23d March last, I was called to attend Mr ——. On my arrival I found him insensible, with a small pulse, pupils dilated, breathing easy, at times muttering to himself the most absurd nonsense; his breath was extremely fœtid. No paralysis, but slight convulsive movements of the right side of the body. His servants informed me that Mr —— had been accustomed to fits of drowsiness, and on one occasion, I am told, he slept for three days. I was further informed that his bowels were not moved for three or four days.

"The Sub-Assistant Surgeon, who was called in before my arrival, had cut off his hair and applied cold. We then gave Mr —— an injection of ol. ricini and turpentine, which acted once; he was further given a couple of calomel and colocynth pills with croton oil, and mustard plasters applied to the nape of the neck. Next morning he had a strong dose of senna mixture; this produced one very copious evacuation.

"During the day I found him better, *i.e.*, he was able to walk; he could not recognise people at once, but did so after an effort. On questioning him he gave a reply, but it was all nonsense; he improved a little, and on the 5th April I sent him to Calcutta.

"I treated him principally with purgatives; every blister failed, partly from his obstinacy, partly from their uncertainty of action. I also gave him small doses of mercury, partly as a purgative and partly to affect his system; this last did not occur. I made him pass his urine daily in my presence, to satisfy myself as the state of his bladder; the urine was thick and very ammoniacal in smell. All this time I kept him up with light nourishing food. When he left me he was able to walk; he had an appetite, could recognise people, and could answer questions very rationally; but if he attempted to carry on conversation he was lost; it was quite apparent his memory was affected.

"Of his previous history I know nothing. I am told he suffered from an attack of apoplexy and subsequent paralysis. There are marks near his joint as if he had been bled. I am fully convinced and am of opinion that Mr ——'s brain is most seriously affected, and I am further of opinion that this present attack is a continuation and result of his previous attack of apoplexy or paralysis. Under these circumstances, I now beg to recommend him for leave of absence for eighteen months, to go to England."

I found him looking remarkably well, as to physical health, stouter and stronger than I have ever seen him. The right hand grasped as powerfully as the left; the legs were equally strong. The tongue was protruded perhaps a little to the right side, but the cheeks, lips, and eyelids were all perfectly natural. The voice not thicker than before; the words articulate, but the speech altogether incoherent. The expression of countenance and the pupils natural; no look of fatuity, insanity, or imbecility; he at once knew and seemed pleased to see me. He was accompanied by a nurse, who says that he eats and sleeps well, and that he is perfectly quiet, tranquil, and easily managed. Indeed, but for his shaven head and incoherent speech, it would be difficult at first sight to believe that he is so ill as he really is. His condition is indeed one of great urgency, and there is reason to fear that some structural change, degeneration, or softening in the cerebral lobes is taking place. The prominent symptom at present is loss of memory of words—"Aphasia," as it has been designated by Trousseau and other pathologists. It is difficult to say how far the intellect is affected; but certainly the main difficulty manifested is the utter inability to give utterance to more than the first few words of a sentence. He seems perfectly to comprehend any question that may be put to him, and makes an attempt to reply; but the first three or four words have barely found utterance before he lapses into the most incoherent and purposeless jargon, which appears to indicate that the memory of words is not only lost, but that ideas in the wildest and most incoherent jumble supervene on the forgotten sounds.

During the recent very hot weather he has shown some restlessness and impatience of control, wanting to go out and refusing to remain in his room. But he is easily persuaded, and with me he is cheerful and gentle in the extreme; indeed, were one only to see him, and hear only his reply to such a question as "How have you slept?" or "How do you feel to-day?" it would be difficult to believe that anything was the matter.

His attempts at writing are as incoherent as his speech; and a note I received the other day was barely legible or intelligible.

His appetite is good, and his secretions are tolerably natural. A tendency to constipation is obviated by a croton pill, and cold to the head seems to be grateful and soothing. His pulse is natural, and his digestive organs in tolerable order. The tongue has a tendency to be coated, and the breath to be offensive, but the aperient removes, or at all events improves these conditions.

The nurse says that he occasionally wets his bed, and once or twice he appears to have forgotten where he was emptying his bowels; but there is neither incontinence of urine nor fæces. A cold bath, the douche or shower-bath, is given every morning, and this, with cold to the head, quiet, the removal of any cause of excitement (mental or physical), and a regulated diet, is all the treatment that has been adopted since he came here. There can be no doubt that the heat aggravates his condition; he is more incoherent and more restless under its influence, and less patient of control. I cannot help fearing, though I do not feel certain, that this is more than mere functional disorder, and that such changes as have been described by M. Bouillaud, Trousseau, Dax, Hughlings Jackson, Sanders, and others, are taking place in the anterior cerebral lobes, and that these changes are the continuation and results of the cerebral disorder that was manifested three years ago in a transient attack of hemiplegia. Without in any way insisting on the connexion between the conditions, in the relation of cause and effect, it is right to bear in mind the possible connexion that the suspicious patches of ulceration formerly alluded to may have with the pathological condition of which the symptoms described are the manifestations. It is possible that the symptoms may be the result of merely functional disorder, but the previous history is opposed to the theory.

30th April.—He has been doing well, much as I have reported, until last night. The nurse reports that at midnight he was sick; that he became more peculiar in his manner; passed urine in bed; was more incoherent and seemed to have more restless or irregular movements of the limbs; was quite conscious, and answered all questions as usual. I find him in the morning with a peculiar expression of countenance, the eyes partially closed, his body and limbs partially curled up in bed. His head was cool, pulse quick, tongue clean, bowels confined. Ordered an enema. He had had a pill at bed-time. I observed that the right arm was more rigid than the left, and that he used the left most; he could grasp firmly with the right, but he could not control the movements, and when he wanted to move it, he had to drag or lift it with the other hand. He was cheerful as usual, laughing and trying to joke, but unable to remember his words. I ordered ice to the head, rest, quiet, and a purgative.

Vespere.—The same condition; the nurse thought perhaps a little better; but I observed that rigidity and loss of control, not of power, was greater. He was quite conscious; said he felt the right arm was not right; but in a moment was more incoherent than ever, not remembering the whole of a word. The leg is not affected, the pupils are natural, and the pulse is slow and regular. Voice is natural, that is to say, no signs of paralysis, so far as it is concerned. *Ordered*—A croton pill, blister to the scalp, and plain but nourishing diet.

1st May.—He is no better; the bowels were moved freely, and the enema acted. He has had a restless night; has passed urine in the bed, and when he speaks is quite incoherent. I find him looking much the same. Right and fore-arm more rigid, but the wrist flexible; he cannot use it freely, aiding its motion with the other hand. The right leg is also feeble, and towards the afternoon it became more so. He understands all that is said, and answers in a peculiar half-sleepy and incoherent tone. He keeps his eyes half-closed, and the eyebrows contracted; the pupils are natural. His face looks less intelligent, heavy, dull, and oppressed. The blister on the scalp has risen. Pulse varies from 60 to 65; it rises with any exertion. Temperature of body natural. I directed nourishment—beef-tea—to be given frequently; and the enema and pill if the bowels do not act again. Cold to the head; blister to be kept open.

His brother said that about noon he appeared to become more conscious, and became much affected, saying it would soon be all over. I expressed my fears to-day that he could not last much longer.

2d.—No improvement; the arm and leg are still rigid. He quite understands what is said, and tries to give an answer. Bowels have been freely moved; has taken nourisment. Keep the blister open; cold to the head. Repeat the enema in the evening, and give another pill if the bowels are not freely moved. Eyes closed, but opens them when told. He replies in a few incoherent half-formed words to what is said, but it is difficult to make out how far he is conscious. The head is cool; pulse 60; skin natural in feeling and temperature.

3d.—This morning I find him changed, and the change appears to have commenced about 9 P M. yesterday. He is lying in the most profound sleep, snoring occasionally. The limbs are certainly more relaxed than they were, and the rigidity in the right arm is diminished. His mouth is closed, and he has taken no food. The enema operated freely. Pulse 60; skin cool; thermometer 98° in axilla; pupils natural—if anything, slightly contracted; but they respond freely to light. He is quite quiet, and has not spoken. He opens his eyes partially; makes a feeble effort to protrude the tongue when spoken to, which shows that he is still partially conscious. *Ordered*—Beef-tea enemata; food by mouth, if he can open it. Keep the blister open; ice also to head.

Vespere.—I find no change; he is as he was in the morning. The urine is passed in bed.

4th.—He is no better; much in the same condition; more comatose, if anything, but still appears to recognise the voice, for he opens his eyes when told to do so, though he makes no other sign. Enema and nutrient enemata return as given. No food has been given by mouth, for he cannot swallow. Face congested. Pulse 112, feeble.

5th.—He is much the same, if anything, weaker. Pulse 112; urine passed freely; bowels have not acted. *Ordered*—calomel gr. x., elaterium gr. ¼ in butter. There is rather less stertor; pupils act freely; opens his eyes when asked to do so; draws up the legs when they are pinched.

6th.—Bowels have acted; blister risen; he is much in the same condition; coma perhaps less profound; pupils act freely; he opens his eyes when spoken to. It is very difficult to get his mouth open, and any attempt at swallowing seems to cause spasm. Repeat calomel and elaterium; nourishment as before by enemata. Beef-tea and brandy; food by mouth when possible.

7th.—Much in the same state; skin hot in afternoon; pulse quicker; less stertor; has taken some broth with great difficulty; does not seem so conscious as he was; hardly opens his eyes when told to do so. Let him have iodid. potass. gr.v. every three hours; nourishment as usual. His pupils are perfectly sentient.

8th.—Much the same; pulse 120, rapid and feeble; pupils still quite sentient; involuntary discharge from bowels.

9th.—Weaker; symptoms the same; a sort of catch in inspiration; pulse 140 to 160; involuntary discharges. Death at 5.30 P.M.

Post-mortem Examination (13 hours after death).—The body was well nourished. The head, which was remarkably well formed, had been shaved, and marks of vesication existed on the scalp.

Head.—On opening the cranium, a small quantity of opaque fluid was seen lying under the dura mater; underneath the situation of the blister, the vessels of the dura mater and corresponding bone were somewhat congested. On removing the brain from its attachments, opaque, but not inflammatory, exudation was observed in excess about the fissures of Sylvius and generally in the subarachnoid space. When the dura mater was completely removed, and the brain turned with its inferior surface upwards, the whole of the inferior surface of the left anterior lobe of the organ appeared shrunken and smaller than that of the opposite hemisphere. There was also noticed matting together of the convolutions on each margin of the fissure of Sylvius on the left side. Just on the antero-lateral aspect of the left corpus striatum in the nerve matter, intervening between that ganglion and the convolutions, there was a portion of yellowish and softened brain, from which, when cut into, a small quantity of opaque serous fluid escaped. The size of the cavity remaining after the fluid flowed away was about that of a pea; and this, in all probability, represented the centre of the mischief which produced the hemiplegia, and interference with the faculty of speech three years ago. But now there was observed somewhat extensive white softening all round this spot, affecting the convolutions on the one hand, and the anterior portion of the corpus striatum on the other. The softened brain here contained granules, broken down nerve tubules, and nerve vesicles, but it was mainly composed of fat globules of variable size.

On the left and inferior aspect of the pons varolii, a portion of white softening, as large as a hazel nut, existed. The nerve structures were so altered in consistency that on pouring water on the part, the softened material was washed away, exposing a breach which penetrated the transverse or commissural fibres, the upward fibres from the corpus pyramidal, and the vesicular continuation of the olivary ganglion. But the whole structure of the pons—the medulla oblongata and crura cerebelli—was softer than natural.

The disorganized nerve substance of the pons was found to be constituted of a great quantity of granular matter, a few stray tubes and vesicles undergoing disintegration, and abundance of fat globules of different sizes. Neither in this nor in the softened part of the left anterior lobe could a single exudation corpuscle be seen.

The arterial circulation was examined with care. The vertebrals and basilar were thickened, rigid, and of a yellowish opaque colour from atheromatous or fatty degeneration. At the commencement of the basilar, the thickening of the vessel was so remarkable as to narrow its calibre most materially. It felt hard, like a piece of cord to the touch; on laying it open here, its internal lining was opaque and roughened, having lost its brilliancy and smoothness. Immediately on the distal aspect of the atheroma, a dark-coloured clot of recent standing was seen completely blocking up the artery, and thus cutting off the normal supply of blood to the cerebellum, pons, and the posterior lobes of the brain on both sides, until a supplemental supply could be furnished by the internal carotid arteries, through the anastamotic system of the circle of Willis.

The whole of the primary and secondary arteries of the cerebrum and cerebellum were more or less spotted with a yellowish-coloured atheromatous material. It was most characteristically developed, however, in the vessels on the left side of the brain.

The heart was flabby, aortic valves healthy; but the ascending aorta, the curtains of the mitral valves, the innominata, left subclavian, and carotid all contained atheromatous material.

For the above description of the post-mortem appearances I am indebted to Dr Joseph Ewart, Professor of Physiology, and Pathologist to the Medical College. He and Professor Partridge, who saw the case with me, were good enough to assist me in conducting the examination.

Remarks.—This case is one of great interest and importance. I have not been able to ascertain that there was any hereditary tendency to disease, either of the vascular or nervous systems; and the history of the patient, previous to the attack of hemiplegia, three years ago, tells only of a sound mind in a sound body. His mental and physical vigour were both remarkable, and although he was always of an excitable and vivacious disposition, there was nothing in the least suggestive of any organic or structural disease.

On hearing of the attack of hemiplegia three years ago, and learning that it was not in any way connected with recent exposure to the sun or to great heat, I was at a loss to account for it, and my thoughts reverted to the ulceration of doubtful origin as suggestive of a constitutional cause. I also thought of embolism, but not having the least idea that he was the subject of any vascular unsoundness, was equally unable to account for it on those grounds. I happened to know that the cardiac sounds were natural, and that he was free from any indications of valvular or other form of heart disease.

That a small vessel had given way, and temporary hemiplegia resulted from the pressure of a small clot in or near the left corpus striatum, was the last conclusion at which I arrived, and the subsequent history, up to his return to duty, appeared to support that conjecture.

The post-mortem examination proved that it was even more than that. The universally diseased condition of the arterial system, and the extent to which it had proceeded in the cerebral vessels, fully account for all, not only the past, but the recent symptoms.

The arteries of the brain—especially of the left side, and more especially those of the posterior part of the encephalon—the vertebrals and the basilar were diseased to a degree that I have never before seen. The vessels of the left side were unusually thickened and irregular from atheromatous deposit, and the basilar itself was completely plugged with a coloured but firm clot. This, no doubt, was of very recent origin, and dated about the period when he passed into a state of almost perfect insensibility some days before his death.

The gradually progressive disease of the vessels had, no doubt, so far interfered with the circulation generally, through the left side of the brain, as to induce the gradually increasing symptoms of cerebral softening to which his history points as having been present, and the probability is that other and smaller embolisms have, like that of the last attack, formed from time to time, and compromised the nutrition of the brain, though not occurring in the vicinity of, or where they immediately affected, the cerebral ganglia. The effects were not so striking as in the first case, where either a hæmorrhage or an embolism directly affected the left corpus striatum.

The cause of embolism, no doubt, lay in the roughened coats of the diseased arteries. As the atheromatous degeneration gradually increased, disorganizing the smooth epithelial lining of the tube, the blood could hardly flow over it without leaving fibrous deposits or coagula, which in their turn, being washed away by the current, were carried into smaller channels which they plugged, and thus the blood itself became the source of the mischief. The recent large embolism in the basilar artery—the result of contact with the roughened and diseased vertebrals—is only an example, on a larger scale, of what probably occurred years ago in a smaller vessel of the anterior lobe, and no doubt often, more recently, in the cerebral circulation generally, until finally the starvation of the medulla oblongata precipitated the fatal event. It is interesting, in reference to the observations of the distinguished pathologists whose names I have already mentioned, to note that the lesion in the first place seemed to fall on the left anterior lobe, and that certainly a marked feature in his case throughout, was affection of the speech; for even after the first attack, though perfectly recovered in all other respects, there remained some peculiarity in his speech—a rapidity of utterance, and a tendency to forget or to substitute words that was quite unnatural. As the wasting of the brain substance proceeded, this condition of *aphasia* also tended to increase, until just before the occurrence of the last fatal embolism of the basilar artery it had become the most marked feature of his condition, and pointed to what we had feared must prove to be irreparable mischief in the brain.

The arterial disease must, no doubt, therefore, be regarded as the cause of mischief; it is remarkable that it should have gone to such an extent at the comparatively early age of forty-two.

The aorta was literally one mass of atheroma. There was more diseased than sound tissue, and it is probable that the same condition existed throughout the body, although no local gangrenes had occurred to give evidence that it was so. In all other respects he was in remarkably good health, being fatter and more muscular than I had ever seen him, within a fortnight of his death. His organs generally were sound; lungs, liver, spleen, and kidneys performed their functions naturally; the heart's action was normal in rhythm and sound; and his pulse was steady and regular. The atheromatous degeneration of the arterial system appears to have been a constitutional peculiarity, and to it must be assigned the disturbance in the circulation which resulted in the pathological conditions I have described.

ARTICLE V.—*Historical Sketch of the Edinburgh Anatomical School.*

By JOHN STRUTHERS, M.D., F.R.C.S. Edin.; Professor of Anatomy in the University of Aberdeen; late Lecturer on Anatomy, Edinburgh.

(*Continued from page* 315.)

JOHN BELL.

WE now go back to the time when the second Monro was in the middle of his career. Among the crowd of students in Monro's class-room, there was one remarkable for his keen eye, intelligent countenance, and small stature. It struck this youth that, although Monro was an excellent anatomist and teacher, the application of anatomy to surgery was neglected. He saw his opportunity, and took his resolution accordingly. This was John Bell.

His profession had been selected for him by his father, who, in gratitude for the relief received by a difficult surgical operation, which he had undergone a month before the birth of his son John, had resolved to dedicate him to the service of mankind as a surgeon. He was bound apprentice in 1779, for five years, to Mr Alexander Wood. As Monro had never been an operating surgeon, the deficiency in his teaching would, we might suppose, be evident enough; but the merit of John Bell's early surgical discrimination is appreciated only when we remember that there was no surgical anatomy, as now understood, in the Edinburgh school till introduced by himself. He saw also that it was not merely demonstration but the practice of dissection which was wanted. In his own words—"In Dr Monro's class, unless there be a fortunate succession of bloody murders, not three subjects are dissected in the year. On the remains of a subject fished up from the bottom of a tub of spirits, are demonstrated those delicate nerves, which are to be avoided or divided in our operations; and these are demonstrated once at the distance of one hundred feet! nerves and arteries, which the surgeon has to dissect, at the peril of his patient's life."[1] His resolution to become a lecturer on anatomy was also original, the Monros having been as yet the only teachers of this department in Edinburgh,[2] although the anatomy class had, for some time before Bell began to teach, numbered over 300. The rapid and steady increase in the number of students resorting to Edinburgh, as we have seen, would not fail to encourage Bell in his resolution; and, as, during the time he lectured (1786 to 1800), the numbers rose from 400 to over 600, he would find an ample field.

After finishing his medical education he travelled for a short time in Russia and the north of Europe, and returning to Edinburgh, entered as a Fellow of this College, on 14th August 1786. He was now twenty-three years of age, having been born on 12th May 1763. The statement that he commenced by lecturing on

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[1] "Letters on the Education of a Surgeon," etc., by John Bell, 1810, p. 579.

[2] Before Bell's time, besides the courses delivered in the University, Dr George Martin, from St Andrews, had read lectures on Medicine in Edinburgh, with encouragement from Monro *primus*, who afterwards superintended the publication of Dr Martin's medical and anatomical writings. (Duncan, Harveian Oration, 1780; and Bower, ii. 191). Dr Andrew Duncan began in 1770, to give a winter course on the Theory and Practice of Medicine, and a summer course on Materia Medica, till 1789, when he was appointed Professor of the Institutes of Medicine in the University. Chemistry was taught by Dr Charles Webster, beside Dr Duncan, for more than ten years; and afterwards by Mr William Nelson, who began to teach in 1790 and died in 1800. Dr Duncan began, in 1776, to give lectures on the cases at the Dispensary which he had founded; and Dr Webster joined him in this. Dr John Brown also gave lectures, during the delivery of which he illustrated his system by having repeated recourse to the whisky bottle which stood on the table. He left Edinburgh in 1786 (Chambers' Biog. Dict. of Eminent Scotsmen, i. 138). But before John Bell began, in 1786, the Monros had been the only teachers of anatomy in Edinburgh.

"Surgery and Midwifery" is so far borne out by an entry in the Surgeons' Records.

2d February 1787.—"Mr John Bell got the use of the Hall for lectures on Midwifery."

15th May 1788.—Enacted "that in future the use of their Hall shall not be granted to any member of the College for more than one course of lectures." Then follows: "Mr John Bell having requested the use of the Hall for one course of lectures, the same was granted."

8th October 1788.—Mr John Bell was granted a feu of "30 feet in front of the ground lying to the south end of the Hall." Same date it was agreed that Mr John Bell, in respect of his becoming one of their feuars, should be allowed to deliver his lectures in the Hall till his house is ready for his accommodation.

He is stated to have built this house in 1790. It was built for the purposes of an anatomical school, and continued to be occupied as such after the time of the Bells. It stood to the east end of old Surgeons' Hall, a little back; and was known in our time as the Lock Hospital, attached to the Royal Infirmary.

His lectures were numerously attended, and rapidly brought him into notice. Although John Bell's name has come down to us chiefly as a surgeon, he was no mere surgical anatomist, as his writings show; and besides being anatomist and surgeon he was an accomplished man. He was an accomplished classical scholar, extensively acquainted with ancient and modern literature, an accomplished musician, a skilful artist, and, as a lecturer, he was not only a ready and polished speaker, but his style was vivid beyond what had been hitherto known in the Edinburgh school. From causes which it would be easy to trace, the ordinary Edinburgh tradition of John Bell has descended from the unfriendly side, and with no little exaggeration or distortion. To the unprejudiced student of his writings, the alleged exaggeration or romance of his narrative appears but the result of investing what is in ordinary hands a dull subject, with the charms of that fine style, and intense descriptive power, of which Bell was so great a master. That he was deeply involved in controversy is true, but he does not appear to have been the aggressor, except in so far as the step of his venturing to teach, and the freedom with which he expressed his own views could be so regarded; and, though nothing loth to accept Dr Gregory's challenge, we can see that he was not a jealous, ill-tempered, or bitter man, but that he bore himself buoyantly through the long controversy, confident both in the position which he maintained and in his ability to defend it. The position which John Bell exemplified and defended, was one which no man will now venture to dispute, that surgery must be based on anatomy and pathology, a doctrine for which there was at that time, in "the windy and wordy school of Edinburgh," neither acceptance nor toleration. A combination led by Dr James Gregory, Professor of Practice of Medicine, was formed against Bell, and the whole force of Gregory's great wit, mixed with, to us, inconceivable personality and scurrility, was launched against Bell, not merely in pamphlets, but in volumes, and even in placards over the town.[1] Thus attacked, Bell replied, and his style, severe and personal though it is, is more dignified than that of Gregory.[2] It was a rash thing to attack John Bell. He replied, not merely standing on the defensive, but, like a capable general, carrying the war into the weak point of the enemy's camp, selecting for his subject the many-volumed System of Surgery by Dr Gregory's ally, Mr Benjamin Bell.[3] Those who know the book will readily believe that its reputation did not survive the attack. As John Bell himself says, "I neither mistook my bird, nor missed my shot," and, "on the day in which the second number was published, the great surgical work of Benjamin fell down dead." Although from our point of view, Gregory's plan for the service of the surgical hospital, at least as since greatly improved upon, was better than the rotation system (which, however, virtually gave Bell a permanent connexion with the hospital), no one can understand that controversy without bearing in mind that it was at least one of the aims of Gregory's party that John Bell, the only true surgeon in Edinburgh, might be excluded from the Infirmary. When the Managers and Gregory's party finally carried it over Bell and the Incorporation of Surgeons, in 1800, Bell was not one of those specially appointed to the surgical hospital under the new system. From the last "Letter" (XVIII. On Hospital Managers, and Hospital Surgeons) in Mr Bell's large controversial volume, some idea may be formed of the unhappy results of this error. It contains some eloquent passages on the importance of anatomical training to a surgeon;[4] and his thrilling account of scenes which now occurred in the operating theatre, reads a solemn warning to Hospital Managers, and a timely caution to those who would aspire to the position of Hospital Surgeon, without having the anatomical training and natural qualities—wanting which, talents and attainments which would command eminence in other departments of the profession, will avail little in the operating theatre.

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[1] The first attack was in an anonymous pamphlet entitled "A Guide to the Medical Students attending the University of Edinburgh"—which as Bell says "openly and impudently professed but one object, viz., to warn students against attending Mr Bell's lectures." This attack he treated with silence. The next was on his reputation as an author, entitled a "Review of the Writings of John Bell, Surgeon in Edinburgh, by Jonathan Dawplucker." "This malignant attack," says Bell, "was stuck up like a Play-Bill in a most conspicuous and unusual manner, on every corner of the city; on the door of my lecture-room, on the gates of the College, where my pupils could not but pass, and on the gates of the Infirmary, where I went to perform my operations." ("Letter," etc., p. 503).

[2] Dr Gregory could write—"Any man, if himself or his family were sick, should as soon think of calling in a mad dog, as Mr John Bell, or any who held the principles he professes."

[3] No. 2. Being a Review of the Surgical Works of Mr Benjamin Bell, by Jonathan Dawplucker. He made no secret that he was the author.

[4] As he somewhere says—The surgeon should be as familiar with the anatomy of the parts as if he had made them.

On the loss of his connexion with the Surgical Hospital, Bell retired from teaching,[1] having thus taught, in all, for not more than thirteen years—from the age of 23 to the age of 36. In estimating John Bell's merit in the reputation he made, we must bear in mind the comparatively short time during which he taught, and that he was early deprived of the position of Hospital Surgeon. He now devoted himself to practice in which he was already extensively engaged, and to farther authorship, especially in the preparation of his "Principles of Surgery," an undying book. He was altogether for about thirty years in surgical practice, and was the leading operating and consulting surgeon of his time in Edinburgh. His reputation attracted patients from all parts of Scotland and England, and from the Continent.[2] It is beyond my limits to follow John Bell as a surgeon, but I may say, shortly, that he was the reformer of Surgery in Edinburgh, or rather the father of it. He was not only a bold and dexterous operator, but combined all the qualities, natural and acquired, of a great surgeon to an extraordinary degree. He was original and fearless, and a thorough anatomist; he had intellect, nerve, and also language—was master alike of head, hand, and tongue or pen; and he was laborious as well as brilliant.

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[1] Notices of John Bell are given—1. In Chambers' Biographical Dictionary of Eminent Scotsmen, 1835; the best account. 2. In Knight's English Cyclopædia, Biography, vol. i., 1856. Chambers says that he ceased to lecture in 1796, and in consequence of the increase of his practice. Knight says, "after the loss of the Infirmary, Mr John Bell never resumed his lectures." The statement that he ceased to lecture in 1796 is irreconcilable with the fact that his brother Charles, who succeeded to his anatomical school, did not become a Fellow of the College till 1st August 1799; and with various dates in his volume already alluded to (Letters on the Education of a Surgeon, etc., 1810). The placards advertising the first "Dawplucker" pamphlet, he tells us (p. 503), were stuck up "on the door of my lecture-room," and that pamphlet appeared in 1799 (p. 508). 2d January 1801 is the date of a letter, in which the Infirmary Managers, while allowing the Fellows of the College of Surgeons to attend the ordinary visit, required that "they shall behave with proper respect and decorum to the attending surgeons," and "shall not on any account make any remarks on their practice and conduct" (p. 571); so that the new system had begun in session 1800-1. We may, therefore, conclude that Bell was lecturing in 1799, and that he had retired before Session 1800-1. Charles had assisted him for several years, and how far he may have given over to him, during the last few years, the more anatomical part of the course cannot now be determined.

[2] I am indebted for the following to his nephew, Dr Charles Bell, of Edinburgh: Although kind and liberal in his attendance on those who could not afford to remunerate him, John Bell did not hesitate to show his dissatisfaction with meanness on the part of those who could well afford to do so. On one occasion he was attending a wealthy Lanarkshire laird, and when he was taking his leave, the gentleman put a cheque for £50 in his hand. On reaching the outer door, he found the butler, and addressing him said, "You have had considerable trouble opening the door to me, there is a trifle for you!" The cheque was taken to the master, the hint was understood, and in due time a cheque for £150 was enclosed.

The following is a list of the works published by John Bell:—

1793–1802. The Anatomy of the Human Body, vol. i., 1793; vol. ii., 1797; vol. iii., 1802. Subsequent editions by Charles Bell.

1794. Engravings of the Bones, Muscles, and Joints, illustrating vol. i. of the Anatomy of the Human Body; drawn and engraved by himself.

1795. On the Nature and Cure of Wounds.

1800. Answer for the Junior Members of the Royal College of Surgeons to the Memorial of Dr James Gregory, to the Managers of the Royal Infirmary.

1801-8. Principles of Surgery, in 3 vols.

1810. Letters on Professional Character and Manners; on the Education of a Surgeon, and the Duties and Qualifications of a Physician. Addressed to James Gregory, M.D.

Observations on Italy, Edin. 1825—published after his death.

The last professional work he wrote was to have been entitled "The Consulting Surgeon," in 3 vols. It was founded on cases which had come under his notice, gave descriptions of the healthy and morbid anatomy of the parts affected, and was illustrated by numerous engravings. Dr Charles Bell informs me that most of the manuscript and some of the drawings for this intended work are still preserved, and in his possession. His Infirmary case-books are also preserved, and contain many drawings by himself.

In 1816 John Bell visited the Continent. In London, Paris, and Italy, he was received with the highest honour by his professional brethren; and many of the English, who were abroad in great numbers after the peace of 1815, consulted him, so that practice followed him. His health continued to decline, and he died at Rome, on 15th April 1820, in his 57th year.

SIR CHARLES BELL.

Charles Bell was trained to anatomy and surgery by his brother John, who was eleven years his senior.[1] His professional career was begun in Edinburgh, continued in London, and concluded in Edinburgh. He commenced very early to assist in teaching his brother John's anatomical class. It is said that he "lectured to some hundred pupils on that science, while comparatively a boy," and that he became "associated with his brother in teaching, the latter taking the surgical, the former the anatomical department."[1] These are general statements, which may be correct enough, but the authority and dates are not given. He entered this College, as a Fellow, on 1st August 1799, previous to which he would not be entitled to teach a class of his own. Being now twenty-five years of age, he may well enough have been engaged in assisting his brother for five years. Whether John still gave part of the course in session 1799-1800, is uncertain. After this, at any rate, Charles conducted the school himself, till 1804, when he went to London. While thus engaged in teaching in Edinburgh, he published the following works:—

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[1] Charles Bell was the youngest of four very talented brothers. Their grandfather, the Rev. John Bell, was minister of the parish of Gladsmuir, East Lothian, and died at the age of 32. Their father, the Rev. William Bell, was for many years the Episcopalian clergyman at Doune, Perthshire, and died in 1779. Like his father, he was a learned man. Their mother was an able and accomplished woman, educated under the care of her maternal grandfather Bishop White. The sons owed much to her training, besides the talent which they inherited. There were eight children, of whom two died in infancy. The eldest son Robert, advocate, became Professor of Conveyancing to the Society of Writers to the Signet, and was author of the Scotch Law Dictionary, and several other works on the law of Scotland. He was an excellent classical scholar and mathematician, and had great taste and execution as an artist. Lord Cockburn (Memorials of his Time, p. 165) gives an account of the indignation and opposition which Robert encountered when he first ventured to introduce independence in reporting the proceedings and decisions in the Court of Session: Lord Eskgrove's objection was, "the fellow taks doon ma' very words." He died in 1816. As the elder brother, he guided the education of the others. The second, John, was 16 years of age when the father died. The third, George Joseph, advocate, was Professor of the Law of Scotland in the University of Edinburgh, and author of several well-known legal treatises—a very distinguished man. He died in 1843. He was four years Charles' senior, and his intimate and sympathizing friend through life. Charles, born 1774, was but five years of age when the father died.

1798-1803. System of Dissections, 3 vols.
1801. Engravings of the Arteries.
1801. Engravings of the Nerves.
1802. Engravings of the Brain.

The greater part of his work on the Anatomy of Expression was also composed before he left Edinburgh. We have no information as to the method in which he conducted his school in Edinburgh, and no class lists remain to show the attendance, all the lists which can be found, I learn from Mr Shaw, refer to Windmill Street. But in one of his letters from London, in 1813, he refers to the time "when I thought all was going on well in Edinburgh—when you recollect my class was ninety." With seven hundred students of medicine in Edinburgh at this time, and Monro (*secundus*) with well on to four hundred in his class, one is rather surprised to learn that Charles Bell—after some years teaching with his brother, and five years by himself, and some years after publishing important anatomical works,—had not more than ninety pupils.

A good account of the lives and labours of the Bells would form an interesting volume. The short notice of Sir Charles Bell, in Knight's English Cyclopædia, Biog. vol. i., 1856, is well written, as far as it goes. The Quarterly Review, of May 1843, contains an able and valuable article (with some inaccuracies) on Sir Charles Bell and his discoveries, from the pen of a professional friend in London who was well qualified for the task. The extracts which it contains from his letters, especially those to his brother George Joseph, and from his diary, are very interesting, and give some insight into the character of his mind. My extracts, when not otherwise stated, are from this source. M. Pichot has written a book on Charles Bell (Sir C. Bell, Histoire de sa Vie et de ses Travaux: Paris, 1858), but without having had much information regarding him. It is a specimen of book-making. Mr Alexander Shaw, of London, brother-in-law to Sir Charles, published in 1839, a "Narrative of the Discoveries of Sir Charles Bell in the Nervous System."

[1] Knight, pp. 627 and 625.

When he went to London, in the end of 1804, he was thirty years of age. The reasons which induced him to take this important step are not distinctly given. It is hinted that the prejudice of his brother John's numerous enemies stood in his way, and that he was desirous of a wider field. It may be added that the Infirmary was now, and probably would have been for long, virtually closed against him. The chair of Anatomy had been filled up for another lifetime by the appointment of the third Monro, who was just about his own age. Two chairs of Surgery had just been instituted, but neither was for John or Charles Bell.[1] On the other hand, the example of the career of John Hunter, who had died while Bell was a student, would be sure to have great influence on a mind like his. Too sensitive a man to engage in strife, conscious of ability, and with high aspirations, we need not wonder that, so placed, Charles Bell was both ambitious to go and glad to leave.

My limits will allow me to give but a general notice of the London part of Bell's career. It was long and eventful, extending over thirty-two years, and may be divided into three parts, his connexion with the Windmill Street School corresponding with the second.

His first seven years in London (1804–1811) was a period of comparative obscurity and struggle with difficulties. He found himself in London with a light purse, without almost a single acquaintance, and with very few introductions.

> "I could see that much could be done—but where to begin? Where find a resting-place? How show my capacity of teaching or illustrating my profession? These days of misery greatly tended to fortify me, so that nothing afterwards could come amiss, or bring me to a condition of suffering equal to what I then endured. A little romance tinctured the whole. . . . There was scarcely a street or a house in which my imagination did not lead me to think of the probability of finding a home at some future period. In short, I was as romantic as any young man could be, though the prevailing cast of my mind was to gain celebrity and independence by science, and perhaps this was the most extravagant fancy of all."

Finding no opening as lecturer at any of the schools, he took, in 1807, a cheap old house in Leicester Street, formerly tenanted by Speaker Onslow, and resolved to begin as a teacher there. Finding the ruinous condition of the old house, he wrote, "I do not know that at any time I was more depressed than when I found the sort of house I possessed." Here, however, he taught and resided till his removal to Windmill Street. He began with three pupils, "and it was many years before he numbered forty." "It was a reverse," he wrote, "to come down to three and six." He was fond of saying, afterwards, that no man would excel as a lecturer who did not begin with six. It was in the loneliness of this old house that the work which made his reputation with posterity was done, although his views did not attract notice for ten years afterwards. Besides working at the nervous system, he published during this period the following treatises:—

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[1] The Chair of Clinical Surgery was instituted in 1803, and given to Mr James Russell. The Chair of Surgery, now being constituted by the College of Surgeons, was to be given to Dr John Thomson, the eminent pathologist, who had given lectures on Surgery for three years. He was appointed to it on 5th October 1804.

1806. The Anatomy of Expression in Painting.
1807–1809. System of Operative Surgery. 2 vols.
1810. On Diseases of the Urethra.

The work on the Anatomy of Expression brought him reputation, but the sale was not large, and it did not secure him the Anatomical Chair in the Academy. His name had meanwhile made him known to many, and he was now on terms of intimacy with the leading surgeons. Abernethy was ten years, Astley Cooper six years, his senior. Of Abernethy he says, "When I first came to London I was a great deal with him; and many a moonlight night have we wandered over half London, when Abernethy had no other intention than of bidding me good night at his own door."

During the next fifteen years (1811–1826) Bell occupied a prominent position among the teachers and surgeons of London, as teacher in the Hunterian School of Anatomy in Windmill Street; and as surgeon to the Middlesex Hospital, to which he was elected in 1814. Although the school in Windmill Street had been the school of William Hunter, and that in which Hewson, Cruickshank, Baillie, and James Wilson had taught, and had, therefore, a name, it was merely a private or adventure school, depending entirely on the teacher. Wilson had, since 1800, been the sole proprietor and principal teacher in the school, and was acknowledged by all to be the *facile princeps* of London teachers of anatomy. On account of increasing practice as a surgeon, Wilson had offered the school (building, museum, succession, and dwelling-house) for £7000, to young Brodie, who had assisted him for several years with the anatomical course, and had for three years given also a course of surgery, by the persuasion and with the assistance of Wilson.[1] Brodie mentions[2] that he had no money at his disposal to meet the purchase, and kept by his separate course of surgery. He appears to have had no enthusiasm for anatomy. What the rest of the arrangement between Bell and Wilson was we are not informed, but Bell gave £2000, which was "all my money to the last penny," and, as he mentions, eighteenpence more. Brodie says[1] that the anatomical lectures were then given jointly by Bell and Wilson, Bell taking "much the larger share of them," and that—"A few years afterwards, Mr Wilson having retired altogether, the school became the sole property of Sir Charles Bell, who however was assisted in teaching surgery by his brother-in-law Mr John Shaw." In 1813, his second year in the Hunterian School, he writes to his brother,—"I am again at 90, but I shall not rest till I have 150." I learn from Mr Alexander Shaw, that in his time at the Windmill Street School—beginning 1822—Bell "lectured for two hours daily on anatomy, physiology, pathology, and surgery, according to the advertisement and common custom in the schools of London, and on three evenings in the week he lectured on surgery specially." His appointment to the Middlesex Hospital, three years after he obtained the Hunterian School, helped him greatly as a practical surgeon, and his clinical teaching there brought pupils and financial prosperity to the hospital.

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[1] See Sir Benjamin Brodie's Autobiography, written in 1855; and Letter by Sir Benjamin to Dr Craigie in the Appendix to the Life of Cullen, vol. ii., regarding the Windmill Street School. If Brodie is correct, it was in the spring of 1812, not in 1811, that Bell obtained the Hunterian School, but some of the dates given by Brodie, writing apparently from memory, are irreconcilable. In the letter (p. 740), Brodie says, I "continued to deliver my lectures in the same theatre for two or three years longer;" while in the Autobiography (p. 154), he says that, on retiring from the anatomical lectures, "I then engaged a house in Great Windmill Street, in which I constructed a theatre for my lectures." Brodie was nine years younger than Bell.

[2] Autobiography, p. 104.

The enumeration of his publications during this period will give some idea of the enormous amount of work he went through, bearing in mind that he was at the same time conducting a school of anatomy and surgery, and discharging the duties of Hospital Surgeon.

1813. Engravings of Specimens of Morbid Parts.
1814. On Gunshot Wounds.
1816. Surgical Observations, or Quarterly Report of Cases, vol. 1st.
1816. Engravings of the Nerves, 2d edition.
1818. Surgical Observations, vol. 2d.
1819. On the Forces which circulate the Blood.
1821. On the Nervous System, in the Philosophical Transactions. First paper printed on this subject in 1810–11.
1821. Illustrations of the Great Operations of Surgery.
1822. Treatise on the Diseases of the Urethra, Vesica Urinaria, Prostate and Rectum. Appendix to the same in 1827.
1824. Observations on Injuries of the Spine, and of the Thigh Bone.
1826. New Edition of John Bell's Principles of Surgery. 4 vols.

Bell appears to have felt the necessity of lessening the great labour and absorption of time implied in teaching such a school. The resolution of his brother-in-law, Mr John Shaw, early in 1824, to withdraw from being joint-lecturer with him, with the view of devoting himself more to the practice of surgery, probably helped to render Bell desirous of being more or less quit of the arduous labours of the Windmill Street School. In November 1824 he had resolved to dispose of the greater part of his extensive museum, and he did so in 1825 to the Edinburgh College of Surgeons. 1825–6 was the last session during which he and Mr John Shaw conducted the Windmill Street School. In the summer of 1826 he disposed of the school, and the remaining part of the museum, to Messrs

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[1] Letter in Life of Cullen.

Herbert Mayo and Cæsar Hawkins, Bell arranging still to deliver some of the lectures for a few years. An inducement to resume systematic teaching in a less laborious form now came before him in the offer of the Chair of Physiology in University College (or, as it was at first called, the University of London), which was about to be established. He accepted the chair, and delivered the introductory lecture in October 1828; but the arrangements made, notwithstanding promises held out, were so unsatisfactory to him, so far from coming up to his exalted notions of a teacher, that, within a few days of the opening of the new institution, he sent in his resignation.[1]

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[1] The writer in the Quarterly Review is in error in giving 1827 as the date at which Bell began to think of relinquishing his work in the Windmill Street School, and in appearing to assign the institution of University College as the reason. The facts are as I have stated in the text. The records of this College show that Bell offered to dispose of the greater part of his museum on 29th Nov. 1824, for £3000; that, on 5th March 1825, by a majority of 35 to 14, the College agreed to authorize the purchase; that, on 22d July, the purchase was completed, Dr Knox to proceed to London to receive the preparations; and that the museum arrived in Edinburgh in the autumn of the same year (1825). Even in 1826, on parting with the Windmill Street School, he engaged to pay back £400 if he afterwards taught in any rival school of Anatomy. The foundation stone of University College was laid in May 1827, and Bell's accepting the chair of Physiology cost him the £400. Messrs Mayo and Hawkins went on for some years with the Windmill Street School. King's College was founded in 1830, but it was two or three years afterwards until the building admitted of anatomy being taught in it. Mayo then "transferred his lectures to this new institution, of which he was the first anatomical professor; and thus the school of anatomy, founded by William Hunter, came to a conclusion." (Sir B. Brodie, Letter in op. cit., p. 741.)

The Museum purchased by this College from Bell was partly formed by James Wilson, who, after the removal of William Hunter's museum to Glasgow, had worked hard to form a new museum in Windmill Street. It was chiefly a collection of pure anatomy. The part formed by Wilson is still distinguishable by means of a separate manuscript catalogue. The Bell part of the museum was begun in Edinburgh by John Bell, and increased by Charles before he removed it to London. It then contained many, probably most, of the numerous specimens of distortion. In London, Bell worked assiduously to enlarge the united museum In offering it to this College in 1824, he retained a number, probably about a third, of the preparations of natural structure, sufficient to serve the purposes of a class. "I shall take out of the collection certain preparations of natural structure, and the remainder, forming a complete set for the illustration of anatomy, and the whole of the morbid preparations, I offer to the College of Surgeons for three thousand pounds." The collection is especially rich in surgical pathology, and the whole Bell and Wilson museum forms a collection second only to the museum formed by John Hunter. £15,000 was the sum given by government for John Hunter's museum, after his death. It was then given over to the keeping of the London College of Surgeons. Besides the Bell and Wilson, and the Barclay, collections, which form the chief part of the museum of the Edinburgh College, it contains many preparations presented by the Fellows of the College. The formation of a museum by the Edinburgh College was suggested by Dr John Thomson, who contributed towards it a collection which he had formed, with the assistance of his pupil Mr James Wardrop. (Life of Dr Thomson, p. 28, appended to Life of Cullen, vol. ii.)

During the remaining ten years of his London career, Bell did not teach, except that he continued to give clinical lectures to those pupils who remained at the Middlesex Hospital. "But," he says, "my hospital, which at the time you knew me enabled me to divide with my colleagues £1200, was lost by the withdrawing of the pupils to the new pretence of an hospital." But his reputation both in science and as a surgeon was now great, and he occupied himself in scientific writing and in practice. During this period the following were his publications:—

1828-9. Animal Mechanics. Published by the Society for the Diffusion of Useful Knowledge.[1]
1829. Seventh Edition of John and Charles Bell's Anatomy and Physiology. 3 vols.
1830. The Nervous System of the Human Body.
1833. Bridgewater Treatise—On the Hand.
1835. Illustrations of Paley's Natural Theology. In conjunction with Lord Brougham.
Some of his Clinical Lectures delivered at the Middlesex Hospital were pub- in the Medical Gazette of this period.

The chair of Surgery in the University of Edinburgh was offered to Bell in 1836. After much doubt he accepted it. "London," he said, "is a place to live in but not to die in." He had always wished for a college life, and wrote at this time—"there is but one place where I can fulfil the object of my scientific labour, and that is in Edinburgh." He lived for five years after his return to Edinburgh. During this time, besides discharging the duties of the surgical chair, and of his practice, his publications were—

1838. Institutes of Surgery, arranged in the order of lectures delivered in the University of Edinburgh. 2 vols.
1841. Practical Essays. 2 vols.
1841. Letters to the Members of Parliament for the City of Edinburgh, on two Bills before Parliament, for Improving the Medical Profession.
A new Edition of his Anatomy of Expression, for the purpose of finishing which he visited Rome.

He still "meditated a splendid work on the Nervous System," but diminished income retarded this; and death (from *angina pectoris*, from which he had suffered a good deal) overtook him suddenly when on a visit near Worcester, on 27th April 1842, at the age of 68.

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[1] Founded on the lectures he had delivered as Professor of Anatomy and Surgery to the Royal College of Surgeons, when elected to that temporary office in 1824. The audience at these lectures was composed of seniors in the profession, students from the various medical schools, and others interested in science. Bell felt anxious, almost nervous, in coming before such an audience, especially one day when he saw before him "the capacious white head and cold impassable look of that sagacious old man Cline. But the success of the course was great—the most learned of the audience were the most pleased." (Loc. cit. p. 222.) "The doors were besieged for an hour before he lectured, and when opened, the young men mounted on the heads and shoulders of the crowd, and were so carried along the passages to their seats." (Letter from Mr A. Shaw.)

In estimating the merit and reputation of Charles Bell, we must bear in mind not merely what he achieved, but his early and long struggle with difficulties, and that he stood alone. His reputation as a physiologist has now thrown his reputation as a surgeon into the shade. Although, in a sense, he disliked practice, as interfering with his scientific pursuits, it would be wrong to say that he did not like surgery, in which he was entitled to take, and took, a high place, both as a scientific and practical surgeon. His numerous surgical works show how much he worked at surgery both as a careful observer and original thinker. He was no mere bookmaker. His operations were anxiously considered beforehand. "I must do an operation to-morrow, which makes me to-day quite miserable." "His style of operating was also universally acknowledged to be most dextrous. The same delicate hand which guided his pencil and his etching-point never failed him in the use of the scalpel."[1] His contributions to Military Surgery were considerable. He went to reside at Haslar Hospital, in 1809, on the return of the wounded from Corunna, and went to see and help at Brussels after Waterloo, a visit of which he has left a graphic account in his journal. As an anatomist his reputation rests on thirty years' teaching, and on his anatomical writings and engravings. The latter, with his "Anatomy of Expression in Painting," also established his reputation as an artist. His power as an artist, both in sketching and in colouring, has probably never been equalled in the medical schools.[2] As a lecturer, his style was "thoughtful and eminently suggestive, forcing the mind to work out and finish the sketches which he presented. . . . His was the eloquence of matter rather than of words—thinking aloud rather than framing sentences." "To the last moment Bell was a conscientious teacher; he never gave a single lecture, even to a limited class, without much preparation."[3]

It is, however, mainly as a physiological discoverer that Charles Bell's name will go down to posterity. In December 1807 he wrote, "My new Anatomy of the Brain is a thing that occupies my brain almost exclusively. I hinted to you formerly that I was *burning*, or on the eve of a grand discovery." In 1810 he sent to his brother the "Idea of a New Anatomy of the Brain," and had it printed for distribution in 1811, but complained that his views attracted no notice, till after repeating them in a paper read before the Royal Society in 1821, he suddenly found himself famous, and raised especially on the Continent to even a higher position as a discoverer than Harvey. Harvey's reputation has had comparatively the advantage arising from the essential completeness of his discovery, and thus the discovery and his name are inseparable. Bell's first discoveries, on the other hand, became the foundation for farther discoveries in the same direction, not separated from his by distinct demarcation. To appreciate the merit and the value of what he proved, we must try to imagine ourselves ignorant not only of all we know of the functions of the various cerebro-spinal nerves, but even of the fact that there are distinct nerves for motion and for sensation, and think of the utter confusion which the nervous system must have then presented. Bell's discoveries were not the result merely of some fortunate stumble, or the flash of a happy idea, but of much reflection, at last confirmed by experiment. From at least 1807, his mind had been full of it, and he worked on with the feeling that he was on the track of a great discovery. One can hardly help following Bell in imagination to London, poor and solitary, but inspired with a noble ambition; working on alone in the old ruinous house, sometimes allured by the light of genius, sometimes driven by necessity; till at last, putting his views to the test of experiment on the living animal, and finding them to be correct, he stood in the first presence of a great discovery and felt that it was his.

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[1] Quart. Rev., p. 204. I quote this article on this point, as it is written by one who was well able to judge.

[2] His natural talent for drawing was early exhibited. When a boy, his brother John made a clever criticism on one of his drawings, which he thus records, "I had drawn with great care a Venus, in the smoothest and softest manner, when, on returning to my work, I found he had with a touch of his pencil propped her very indecently with a pole stuck against the ground on that side to which she unfortunately leaned." (Loc. cit., p. 199.) Some of his paintings of gunshot wounds and of dissections may be seen in the Museum of the Edinburgh College of Surgeons. In the Military School at Netley were lately placed the book containing the sketches which he made of cases at Waterloo, and the larger class-drawings which he made from the original sketches. Another series of his drawings was lately placed in the library of the London College of Surgeons (Medical Times and Gazette, February 17, 1866, p. 179.)

[3] Loc. cit., pp. 203, 221.

It must be granted that Charles Bell was not rewarded as he deserved. His brethren in London were not to blame for this, for they gave him, in 1824, all that was in their power to give, the temporary appointment of Professor of Anatomy and Surgery to the College of Surgeons; nor was Edinburgh to blame for it, for the patrons of the University offered him the only suitable chair which had become vacant since he had made a name, though it brought him only four hundred pounds a-year. The only appointment which was denied him, and that on three occasions, one of them in 1824, was that of Professor of Anatomy to the Royal Academy in London, a position for which his claims were beyond all question unrivalled. His income in London fluctuated between £1400 and £2400 a-year, not a great income for a famous surgeon in London, but it might have been much larger had he not chosen to give much of his time to science. It is not meant that his life was one of disappointment. Bell's ambition sprung from consciousness of power, genius, and the love of science, not from the desire for wealth; the sciences which he taught and cultivated—anatomy, physiology, and surgery—then presented, to him visibly, much untrodden ground; and, to those with whom it is voluntary, constant work, day by day and far into the night, is an intellectual pleasure. Much more with Bell who was drawn on by the belief that he had got the clue to a great discovery. In his first ten years in Edinburgh, besides these incitements, he had fair success. At first in London, his anxieties were lightened by high hopes, and in the Hunterian School and Middlesex Hospital, he was both prominent and successful. There, and after he ceased to lecture, he enjoyed fame and honours at home and abroad. He could not but feel this, when men like Cuvier, Larrey, Tiedemann, and Scarpa treated him with honour; and when he was spoken of on the Continent as greater than Harvey. One day Roux dismissed his class without a lecture, saying, "C'est assez, Messieurs, vous avez vu Charles Bell." He was knighted in 1830, along with Herschell, Ivory, Leslie, and Brewster, on the accession of William IV. "Strangers from all parts of the world consulted him, and offered him large fees for a few visits; and had he chosen to remain in London, and mastered his ruling passion for the pursuit of science, he most certainly might have thrown aside his wants and his anxieties; but that passion was his life, and only with life did it perish."

His acceptance of the Edinburgh chair was a mistake. He had always longed for a college life, with position and leisure for scientific pursuits. The mistake now committed was in overlooking the fact that it was a practical not a scientific chair to which he was going, and that while he broke up a good position in London, the growth of many years, he had been thirty-two years absent from Edinburgh, and was too far advanced in life to begin again. "I seemed to walk in a city of tombs." Great disappointment followed. Neither his class nor his practice yielded the expected income. Although he was still the same careful and successful teacher, the unhappy state of the anatomical class at this time prevented the other medical classes in the University from being numerously attended—"There are here six lecturers on surgery"—"my class will not bring me £400. I stand well comparatively, but that is poor comfort, since it shows I have no mass to draw upon."—"I had during my whole life desired a college life. I thought I had here obtained a situation where I could constantly pursue science, and meditated a splendid work on the nervous system." For this he had left London, with a position in which he could have become wealthy had he but given up science. His services ought to have been secured to science by a pension from the state. His discoveries, viewed not only as additions to science, but as at once throwing new light on disease, and adding greatly to our power to relieve suffering, more than entitled him to such recognition; and it is short-sighted policy in a nation not thus to secure to science the services of men who have proved their ability to add to our knowledge and power. It was Bell's misfortune that no great anatomical position which would have made him independent of practice was within his reach, for that would have been his right place. Compare his career with that of the second Monro—the latter occupying a ready-made and splendid position from his boyhood, and yet Bell notwithstanding all his difficulties achieved more than Monro. Had Charles Bell, instead of the third Monro, been professor of anatomy, we may imagine, great as it was, how much greater his career would have been, how much more he would have done for science, and how much additional renown he would have brought to the Edinburgh school. As it is, Charles Bell's name must be placed in the front rank among those who have contributed to the progress of science, and to the relief of human suffering.

BARCLAY.

Among the former Anatomists of Edinburgh, there is no name that I have been accustomed to hear so frequently or with so much respect as that of Dr Barclay. His period as a teacher was from 1797 to 1825, in all twenty-seven years, but, having first studied for the church, he was late in beginning to teach anatomy.

He was the son of a small farmer in Perthshire, said to have been a man of great natural shrewdness and vivacity. His education was that of the Scotch parish school, under a good Latin scholar, followed by five years at the University of St Andrews, as an arts and divinity student, where he held one of those bursaries —gained by competition at which he took the highest place— which have enabled so many deserving young men in Scotland to obtain a university education. At college he was industrious, ardent, and distinguished not only for his Greek, Mathematics, and Hebrew, but already for that candour, good humour, and kindliness which he displayed through life.

Having taken licence as a preacher in the Church of Scotland, Barclay spent about the next ten years of his life in the capacity of family tutor, in Perthshire—first at Loch Dochart, and then near Dunblane—also preaching occasionally. It may be taken as proof that, with all his enthusiasm, he had no ambition, that during all this time he expressed no discontent. He taught the children, studied, joined in the round of country life, and showed the bent of his mind by engaging in the recreation of natural history.[1]

His change to medicine appears to have been determined accidentally. We are not informed whether the church had been his own choice in boyhood, or that of his parents, but he was in no way deterred from it by the fate of his able and impetuous uncle the Rev. John Barclay, A.M.; who, having been driven from the church by the jealousy and narrowness of his brethren, was at this time the active head of the Barclayan or Berean Churches, which he had planted in many places in Scotland.[1] Nor had young Barclay any quarrel with the church, or with his brethren in it, either now or afterwards.[2] In his twenty-ninth year (1789-90), being sent to Edinburgh in charge of the two sons of Sir James Campbell, in whose family he was tutor, he attended the medical classes, especially anatomy, and was now in a position to feel the kindling influences of science and city life. He was gradually drawn on to give his chief attention to medicine, though still occasionally preaching for his brethren in the neighbourhood; and in 1796, seven years after he had come to Edinburgh, he took his degree as Doctor of Medicine at the University. His thesis, *De Anima, seu Principio Vitali*, was dedicated, we read with some surprise, both to Dr Gregory and to Mr John Bell.

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[1] Dr John Campbell, then one of his pupils, informs me in evidence of Barclay's early tendency to anatomy, that, although he was a great favourite with every one, and a most pleasant companion, he was not held in the same affection by the dogs of the place, who exhibited a marked antipathy to him; and that this was attributed to their having seen him engaged in dissecting a dog.

He immediately prepared for teaching anatomy.[3] Besides attending Monro's course, he had studied anatomy under John Bell, and became his assistant.[1] After spending some time in London prosecuting anatomy under Dr Marshall, an able teacher, he returned to Edinburgh, and began to lecture in 1797, a year after his graduation, and now in the thirty-seventh year of his age. He had brought with him some anatomical preparations, part dissected by himself, part purchased, part presented by Mr George Bell, afterwards an able surgeon in Edinburgh. With this small museum he commenced to lecture in a house in the High School Yards, adjoining Surgeons' Square, which the liberality of his friend Sir James Campbell enabled him to fit up. He commenced with great anxiety and diffidence, but by degrees acquired confidence, and the zealous friends who came to hear and encourage him were satisfied, before his introductory lectures were over, that he would succeed. These were small and modest beginnings.

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[1] An interesting account of the career of this able and excellent man is given, by a contemporary, in Chambers' Biog. Dict. of Eminent Scotsmen (vol. i. p. 127). The duty and wisdom of toleration had not then begun to be understood in the Church of Scotland. It was four years after the uncle had been driven out, that Barclay went (in November 1776) to the University with the view of studying for the Church. It may have been the discussions which he must have heard, at home and at college, regarding his uncle's views and publications, which led young Barclay, before he left college, to write what he termed "A History of all Religions," which, however he did not publish, and he had destroyed the manuscript, as it was not found among his papers.

[2] After he had begun to teach anatomy, he used to sit as a member of the General Assembly of the Church. His extensive acquaintance with the clergy is said to have helped to bring him pupils, at least in his earlier years, when he required it. On only one occasion did his theological studies bring him into danger. He had a trial exercise to read at the Divinity Hall, in which he required to criticise the words of the original. "He proposed to read it to his uncle before he delivered it, and when he was in the act of doing so, his respected relative objected to a criticism which he had introduced, and endeavoured to show that it was contrary to several passages in the writings of the Apostle Paul. The doctor had prepared the exercise with great care, and had quoted the authority of Xenophon in regard to the meaning of the word. The old man got into a violent passion at his nephew's obstinacy, and seizing a huge folio that lay on the table hurled it at the recusant's head, which it fortunately missed. Barclay, who really had a great esteem for his uncle, related the anecdote to a clergyman a few days after it happened, and laughed very heartily at it"—(Chambers, i. p. 137).

[3] In the Life of Dr Barclay by Sir George Ballingall, it is stated that he determined on this step immediately after his graduation "we believe somewhat suddenly," while in the notice of Barclay in Chambers' Biog. Dict. it is stated that he "had in view to deliver a course of anatomy for a considerable number of years." The two statements are not quite irreconcilable. The Life by Ballingall, his pupil and attached friend, is a fair account of the principal events of his private and professional life, but being written in 1827, a year after Dr Barclay's death, the author, unfortunately for us, had not thought it necessary to say much about Barclay in the aspects in which he is now of

That the attendance on his lectures was small during the earlier years will occasion no surprise when I state that his lectures during the first seven years (1797–8, 1803–4), were recognised by no licensing board; being a Fellow of neither college, his lectures could not qualify. No doubt, there were 600 to 700 students in Edinburgh, bound to attend only one course of anatomy; but that they did not resort to the yet unknown Barclay for the additional courses we need not wonder, when we recollect that John and then Charles Bell were teaching on one side of him and the second Monro on the other.[2] The increase of his class, notwithstanding,

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interest to us. The same remark applies to the well written notice in Chambers' Biog. (1835), which is chiefly taken from the Life by Ballingall, but some additional facts are mentioned. A good life of Dr Barclay, giving an account of his system and school as an anatomical teacher, and illustrating his social life and character, by some one who was familiar with him in both capacities, would have been both valuable and entertaining. Many anecdotes associated with him are now lost. I am indebted to several senior medical friends for additional information of the kind I chiefly desired regarding Barclay, more especially to Dr John Campbell, brother-in-law to Dr Barclay, and to Mr Nasmyth, who was one of Dr Barclay's assistants.

[1] During part of this time Charles Bell was teaching with his brother John. There was no vacancy to induce Barclay to begin at this time, and we are left to suppose that he was induced to commence as teacher of anatomy, in the absence of any other prospect, by his liking for anatomy, and the prospect which the teaching of it reasonably afforded, from the great and rapidly increasing number of students in Edinburgh. There was also the example of Mr William Nelson, who lectured on chemistry. Nelson, educated in the Church of England, had become a Methodist, and going in to London to dispute with the Rev. John Barclay, ended by becoming his convert. He afterwards went to Edinburgh, in connexion with Mr Barclay's sect, where he practised as a surgeon and began to lecture on chemistry in 1790. He lectured twice a-day in winter, to two different sets of students, and also gave a summer course. He died in 1800. (Chambers' Biog., i. 134 and 139.)

[2] Ballingall referring to his having heard Barclay say that the number of his pupils "was at first exceedingly scanty," speaks (Life, p. vi.) of "the second Monro, and his former master, Mr John Bell, being then in the blaze of their fame." This agrees with my conclusion that John Bell did not retire from teaching in 1796.

encouraged him to remove to a more suitable lecture-room. With this view he purchased the house in Surgeons' Square, so well known afterwards as Dr Barclay's lecture-room, where he continued to the end to teach.[1]

In the summer of 1804 two obstacles to the increase of Dr Barclay's class were removed. The departure of Charles Bell for London left the field open; and the College of Surgeons passed a resolution recognising Dr Barclay's lectures, thus giving the same privilege as if he had been a Fellow. This was on 19th June, and in a letter of acknowledgment, on 7th August,[2] he says, "It is the highest honour that has ever been conferred on me, and you may be assured I shall always remember it with the warmest sentiments of esteem and gratitude." The publication of his work on Anatomical Nomenclature, in the previous year, must have helped to procure him the confidence of the College.[3]

His efficiency as a teacher, and his reputation as an author, being now established, and the serious obstacle to his success removed by the College, the attendance on Barclay's class rapidly increased. His class lists have probably not been preserved, at least my efforts to trace them have not been successful. It is known, however, that his lectures were now, for twenty years, very numerously attended, and I have reliable information that the number reached fully 300. The number of students of medicine in Edinburgh was very great during Barclay's time—At first from 600 to 700, it had, in 1810, reached 900;[4] and, with some fluctuations, continued at this high rate during the rest of Barclay's time (1825). It was not indeed till from five to fifteen years after his time that the number was considerably, and inevitably, reduced, as numerous other schools of medicine which now exist began to be established. This was a time of large classes. There was Monro with his 400, and Barclay getting on for his 300. Barclay was the only lecturer till 1808, when Gordon began, and taught, as we shall find, for ten years, with a class under 100. Barclay was, however, more than compensated for this by the retirement in the same year (1808) of the second Monro, after which the students largely resorted to the lecturers for their anatomical instruction. I understand that it was after this, and gradually, that Barclay reached his 300. It will give some idea of the facility, as well as the possibility, of forming a good extra-mural class of anatomy during the time of the third Monro, to mention that, in the year 1821–2 (for which we happen to have the numbers in each class given), while the number of students of medicine in the University was 802, the attendance on the Anatomy Class was only 200, the students taking only the one course of anatomy which the University regulations required.[1]

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[1] It was originally built for a lecture-room by Dr Duncan, sen. Barclay purchased it from Dr Ramsay. Messrs Latta and Ramsay had made an unsuccessful attempt to teach anatomy. (Life, p. vi.; and Chambers, p. 139.) It was the three-story house, with arches and pillars, which stood between old Surgeons' Hall and the old hall of the Medical Society. The theatre was above, and was from time to time enlarged as his class increased.

[2] Surgeons' Records, 13th Sept. 1804.

[3] As Charles Bell had now resolved to leave for London (1803-4 was his last session as a teacher of anatomy in Edinburgh), Monro would have been left the only qualifying teacher of anatomy in Edinburgh, for the College as well as for the University, with some seven hundred students in the school, had the College not now recognised Barclay's lectures. It was not till two years afterwards that he acquired the privilege in his own right, by becoming a Fellow of the College of Physicians. It was probably quite beyond Barclay's power, in these earlier years, to meet the heavy expense then attending entrance to the Fellowship of the College of Surgeons, especially to those who had not been apprentices, and were neither sons nor sons-in-law, of Fellows. He was elected an Honorary Fellow of the College of Surgeons on Nov. 12, 1821.

[4] These are the numbers on the matriculation list of the University, but, since probably about the beginning of the present century, there have been a variable number of students of medicine in Edinburgh not included in that list. During the war, which created, up to 1815, a great demand for surgeons in the Army and Navy,—for whom a surgeon's, or assistant-surgeon's, diploma from the College of Surgeons was then sufficient—there were probably a considerable number of students who did not seek the University degree. It is impossible to say how many were in this position, and as many of these

An important element in Dr Barclay's success was that he gave his whole time to anatomy—to teaching, research, and museum making. He was thus able not merely to appear in the lecture-room but to work constantly with his pupils. He was the first teacher of anatomy in Edinburgh who did so, the Monros and Bells having been also engaged in practice either as physicians or surgeons. It does not appear that Barclay ever looked forward to practice, if he did at first, the rapid growth of his class, after 1804, rendered it unnecessary.[2] But he was not unfrequently consulted by the surgeons in cases specially requiring anatomical knowledge.

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students took part of their classes in the University, part of them are included in the University matriculation list. Since all the medical classes required for the diploma of the College of Surgeons could be obtained out of the University, there has been no means of determining the exact number of students in Edinburgh. The Register at the College of Surgeons is incomplete, and most of the names on it are also on the University list. The entries at the Infirmary may not contain the names of the junior students, or some of the others. The new system of registration gives only those who are beginning their studies. The returns to the Inspector of Anatomy give only the pupils engaged in practical anatomy. The University matriculation list, always the nearest approximation, has been especially so for the last twenty years, since the end of the period of the third Monro.

[1] The numbers are given in a third Appendix to Crawfurd's History of the University. The Anatomy class is usually more than twice the size of the other medical classes in the curriculum for the degree. These were, in that year, attended as follows: Materia Medica, 280. Institutes of Medicine, 181. Practice of Medicine, 275. Clinical Medicine, 141. Botany, 201. Chemistry (Hope), 497. The Greek and Latin classes were, respectively, 417 and 376, the number of students in the Faculty of Arts, in that year, being 871.

[2] His income from teaching in the best period was from £800 to £900 a-year. His fee was £4, 4s., but, of the 300 students, part would be second year, an

He lectured twice a-day, at 11 A.M., and in the evening at 6. These were not courses of a different kind, but the evening lecture was a repetition of the morning one, simply for the reason that the class-room was unable to take in so large a class. The student got his ticket either for the morning or the evening lecture as he chose. The morning lecture was the most numerously attended. The evening lecture began some time after the commencement of the session as the class filled up. At the time his class was largest, he even repeated the lecture at twelve o'clock also, making three lectures a-day for him, though only one for the student. He adopted the systematic method — bones, joints, muscles, etc., separately—and went through the whole of anatomy in each course, his lectures also including surgery (the title of his course being, like Monro's, "Anatomy and Surgery") and also physiology, blending them with anatomy; for, as will appear further on, attendance on courses of surgery and physiology, separate from anatomy, was not required by the College till after Barclay's time. At the end of his course he showed the surgical operations. Besides accomplishing all this in one course, in accordance with the system and science of the day, he found time to exhibit and quote from the books of the old anatomists, and for many humorous illustrations. When he came to the soft parts he always had a dissection to illustrate the lecture.[1]

Dr Barclay read his introductory lectures, but for his ordinary lectures did not use even notes. He even did not make notes of his lectures for private use, nor was he known to consult any book before going up to lecture, except Innes on the Muscles. In the lecture-room his language was unaffected and clear, his object being to give, on a philosophical plan, a useful course. "His distinguishing merits as a lecturer, were his rigid adherence to that order of demonstration which he had adopted as the most

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some perpetual pupils. Besides his museum and a valuable library, he left between £7000 and £8000 at his death. It can only have been during the last twenty years (after 1804) that his class became remunerative. In 1811 he married the daughter of Sir James Campbell, but had no children. His house was on the north side of Argyle Square, where many of his pupils experienced his kindness and hospitality.

[1] One day at the beginning of the lecture, Barclay lifted the sheet which covered the subject, and laying it down again, began to make general remarks, with which, to the surprise of the class, he went on till the end of the hour. A pupil, on going back after the class was dismissed, heard him reproving his assistant in animated terms. He had omitted to have ready a dissection for Barclay's lecture. The story illustrates pretty well Barclay's power of speaking to the general question on an emergency. This was long after he had become an experienced lecturer.

On one occasion the assistant, having been out at dinner, came to the dissecting room at ten o'clock at night to perform this duty. Going to where the subject lay, he began to pull off the sheet, which to his surprise was again pulled back. Candle in hand, alone, as he thought, in the dark room, he pulled again and again, and, to his horror, the sheet was each time pulled against him. It turned out to be only a dog which somehow had got into the premises.

useful; his equal and unwearied attention to every department of the course; his copious and happy illustrations of every subject on which he had occasion to touch, and his anxiety to lay a solid foundation, by impressing upon his auditors a knowledge of all that is important, all that is certain, all that is useful in the science of anatomy; while, at the same time, he discouraged a taste for frivolous, vague, or useless speculations."[1] "He took great pains to resolve all the puzzles, so to speak, of anatomy. He was, for instance, most elaborate in showing the various duplicatures of the peritoneum. On the brain he always gave a lecture (generally on a Saturday) of four or five hours' duration. He contrived to weave in many jocularities, such as telling us that the Pes Hippocampi was called after the foot of an animal which had no foot. What he gave he gave well and intelligibly, notwithstanding a snivel in his utterance, the effect I believe of the habit of snuffing."[2] He was so occupied with his subject that he often disregarded the bell, lecturing on as the class dismissed, until he found himself without an audience. One of his telling illustrations of the necessity of anatomical knowledge used to be the mention of a veterinary surgeon having written on the diseases of the gall-bladder of the horse, unaware that the horse does not possess that organ. He was severe on the surgical anatomists of that day for their multiplication of fasciae, which he maintained could be manufactured by the knife. The, as it appeared to him, nearly exhausted state of anatomical science, he illustrated by the comparison of the early anatomists and their successors to the preparers of the ground, the sowers, and the reapers; his predecessors to the gleaners; while he and his contemporaries were only the stubble geese.

Dissection was carried on in a room badly lighted from the side. The supply of subjects was partly from the neighbourhood, partly from London, but dissection was not yet compulsory, and, on account of the expense and other difficulties, not general.[3] At first, in the Edinburgh School, subjects were obtained in the neighbourhood, and at moderate expense; but the consequent alarm and the increase of the school rendering the supply deficient, they were obtained from London, though at considerable expense, and this diminished the supply in the London schools, and created dissensions between the men and the London teachers. This almost stopped the supply from London, and they were obtained from Liverpool and from Ireland. At one time, London, Edinburgh, and Glasgow were all supplied from Liverpool. When the number of students in Edinburgh was so great, it was impossible to obtain a supply from the neighbourhood, or, indeed, to obtain a sufficient supply at all. That Dr Barclay was unable to do without a supplementary supply from London there is no doubt, from the facts which have been mentioned to me by one who was present. He could obtain from London not only a subject, but the kind of subject which he wanted for his lectures at a particular time. The school at St Thomas' Hospital, London, had been very ill supplied for some months, the man assured the lecturer that he had been sending in a good supply, on which it was discovered that the porter of the school had been keeping them up and sending them off, at an advanced price, to Edinburgh. Such were the men on whom the anatomists were dependent.[1] On one occasion one of the Edinburgh men, on his way to Barclay's rooms with a subject, fell in Infirmary Street, broke his leg, was caught and tried, but got off. Latterly, when Aitken became Demonstrator in Barclay's rooms, he managed the supply, going out for them with the aid of the assistants and the more adventurous pupils. Such were the difficulties and dangers attending anatomical study, before the Legislature saw, in 1830, that it was for the public interest to legalize dissection.[2]

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[1] Ballingall, Life, p. xiv.

[2] Letter to me from Dr Gairdner. Dr Barclay used to say that he had neither the sense of taste nor smell. He was a great lover of snuff, which he took freely during lecture, without caring first to wipe his fingers. On a handsome box presented by Cullen the anatomist, found in Dr Barclay's repositories, occurs the following inscription, kindly copied for me by the Rev. James Farquharson, Minister of Selkirk, into whose possession the box has passed:—

Q. F. F.^{q} S.
JOANNEM BARCLAY M.D.
Præceptorem suum,
quo nares ejus et corpus identidem suavissime recreentur,
hâcce Pyxide donavit
GULIELMUS CULLEN
Prid: Kal: Nov: A.S.H. 1825.

[3] Mr Naysmyth informs me that, in a class of 200 he has known not more than 30 that dissected.

Dr Barclay had always pursued Comparative as well as Human

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[1] The following entries occur in a diary, for 1811, which one of the London "resurrectionists" kept. *Dec.* 28. "At 4 o'clock in the morning, got up with the whole party to Guy's and St Thomas's crib, got 6, took them to St Thomas's, and met at St Thomas's again, packed up 3 for Edinbro', took one over to Guy's." *Jan.* 15. "Went to St Thomas's, came back, packed up 2 large and 1 small for Edinbro. At home all night." *Thursday* 16. "The party met at the Hartichoak, settled the above, each man's share £8, 4s. 7¼d." *Tuesday* 21. "Looked out. Jack and Butler drunk as before, hindered us from going out, at home."

[2] When his class became large, Dr Barclay had a Demonstrator in the dissecting room, besides the assistants who dissected for the class and otherwise worked with him in the rooms. John Dickson was a well-known Demonstrator. Originally his servant boy, having found him reading a Latin book, Barclay had him educated and trained. Some of the minute dissections of the arteries in the Barclay museum were by Dickson. He entered the Navy as a surgeon, and became physician to the Bey of Tripoli. He died about ten years ago. Frederick Knox and John Aitken were also Demonstrators in Barclay's school. After Barclay's death, John Aitken lectured for a few years, to 1833-4, on Anatomy, at 4 Surgeons' Square, assisted in the dissecting room by his younger brother, Thomas, who also lectured on Physiology where Dr Murray the chemist taught. John Aitken was reckoned a good comparative anatomist, and, before he got into irregular habits, was a popular teacher.

Anatomy, and during several of his latter years gave a special course of lectures on Comparative Anatomy in the summer session.[1] The course consisted of a daily lecture, and was mainly occupied with osteology, illustrated by the skeletons which he had collected. His Comparative Anatomy was philosophical as well as practical, and in advance of his time.[2] Professor Owen writes, "The extensive knowledge of Comparative Anatomy possessed by my revered preceptor in Anatomy, Dr Barclay, enabled him truly to interpret the parallelism of the bones of the fore-arm and the leg proper. He showed how the ulna and its homotype the fibula exhibited the same 'variety and unsteadiness of character, sometimes large, sometimes small, and sometimes merely a process' of the more constant bone of their respective segments."[3] It was proposed at this time to make a chair of Comparative Anatomy in the University for Dr Barclay. The proposal gave rise to much discussion, scientific, personal, and political, and was not carried out.[4] Dr Barclay also saw the importance of Veterinary science, and "to him the public is chiefly indebted for the establishment of the Veterinary School, so successfully conducted by his pupil Mr Dick."[1]

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[1] So far as I can ascertain, Barclay did not give demonstrations on Human Anatomy in the summer session; but at least when Aitken became Demonstrator, dissections were conducted and demonstrations given by him, during the summer session.

[2] "It affords clear and ocular demonstration that all animals are constructed on the same general outline, and only varied as to class, order, genus, and species." (Barclay's Introductory Lecture to Comparative Anatomy, p. 165.)

[3] On the Nature of Limbs, p. 22, 1849. "M. Flourens had probably never seen Dr Barclay's 'Explanations of Mitchell's Plates of the Bones,' 4to, 1824, when he wrote (Annales des Sciences Naturelles, 1838, pp. 35, 37), 'Il a été plus difficile de rapporter individuellement chaque os d'un membre à chaque os de l'autre. Chose étrange, on ne sait pas encore s'il faut comparer ensemble l'*humerus* et le *femur* du même côté ou l'*humerus* d'un côté et le *femur* de l'autre; on ne sait pas quel est celui des deux os de l'*avant-bras*, le *radius* ou le *cubitus*, qu'il faut comparer à tel ou tel des deux os de la jambe, le *tibia* ou le *péroné*.' He supports his reproduction of Barclay's proposition regarding the serial homology of the bones of the fore-arm and leg by similar remarks drawn from Comparative Anatomy."—Owen, op. cit., p. 23.

[4] The students became interested in the discussion, and there were squibs and caricatures flying about. There is a caricature in one of Kay's Edinburgh Portraits (CLII.), entitled "The Craft in Danger—An uproar among the craftsmen at Ephesus opposing a new species of knowledge which they thought might interfere with the profits of their trade." The skeleton of the elephant, with Barclay perched on its neck, is approaching the University gate. He is resisted by Monro and Jameson. Monro is striking with a human thigh bone, and exclaiming, "Sirs, you know that by this craft we have our wealth." Jameson, sitting on a walrus, is striking with the tusk of a narwhal, and exclaiming, "Bar-Clay, I know it not, neither is it mentioned by the illustrious Werner." Gregory, behind, is pushing on the elephant, and exclaiming, "Go in friend, fear nothing." A figure, whom I do not recognise, exclaims, "I insist Bar-Clay shall be employed in the new building. It will strengthen and adorn the structure;" and Hope, pulling back with all his might a rope round the elephant's fore-legs (the other end attached by an anchor to a mass of "Strontian"), is exclaiming, as the rope breaks, "Hope is lost—the rope gives way, and muscular motion gains the day." Whatever may now be thought of the wit, it is evident that the artist had not gained admission to Dr Barclay's museum before sketching the elephant. I am indebted to Mr W. F. Watson for kindly sending me his copy of the caricature.

Dr Barclay published several valuable works, the fruit of much observation and thought. The following is a list of his publications, which, it will be observed, were commenced at the time he began to teach, and were continued to the last year of his life:—

1797. The Article "Physiology" in the Encyclopædia Britannica.

1803. A new Anatomical Nomenclature.

1808. The Muscular Motions of the Human Body.

1812. A Description of the Arteries of the Human Body.

1819. Explanatory References to a Series of Engravings representing the Bones of the Human Skeleton, with the skeletons of some of the Lower Animals. The Engravings by Edward Mitchell. Second Edition in 1824.

1822. An Inquiry into the Opinions, Ancient and Modern, concerning Life and Organization.

1825-6. Introductory Lectures—five in number, four to the study of Human Anatomy, one to Comparative Anatomy. Mostly printed before his death in 1826, and published in 1827, by Sir George Ballingall, M.D., with a Memoir of Dr Barclay's Life.

The large Museum which Dr Barclay left, contains specimens contributed by former pupils from many parts of the world, but the greater part of it was formed by his own design and industry, and at considerable expense. It was left to the keeping of the College of Surgeons on condition that it should be rendered useful, and that it should retain his name. It is now well displayed in the first room and gallery, as we enter, and is open to the students and to the public, like the rest of the museum of the College. Besides an abundant collection of the more ordinary specimens of human anatomy, there are many valuable vascular preparations. The skeletons of the larger animals—the elephant, boar, camel, ox, deer, horse (including the Arabian, the great cart horse, the pony, and the ass), bear, walrus, seal, dolphin, narwhal, and the ostrich—form the most striking part of the collection, but the shelves are full of specimens which the anatomist can appreciate. In the gallery are many fine specimens of skulls and teeth of various mammalia, and there are many interesting specimens of reptiles, wet and dry, some showing very well the osseous structure of the chelonia. When it is considered that it was made and collected by himself, over a period of about twenty-seven years, during which he was laboriously occupied in teaching and authorship, the museum is quite a monument to Barclay's enthusiasm and industry.[2]

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[1] Ballingall, p. 13.

[2] The contents of Dr Barclay's museum are perhaps better known to myself than to any one else. I have been much indebted to the opportunities of study which it afforded me. Many of my class drawings and notes of comparative osteology were made in it, and, by the permission of the College, I was allowed to teach in it when the specimens were too large to be removed to the theatre. The elephant was purchased, and the bones prepared, by Sir George Ballingall in 1813, and afterwards sent home to Dr Barclay. It was at first differently put up and a drawing of it, by Dr Greville, appears in the series of engravings

Dr Barclay was throughout life a great student, though not much either of a late sitter or early riser. He was a very good-natured man, almost never angry, with a great fund of humour and anecdote, and his wit, unlike that of many, had nothing offensive to others in it. The late Dr Greville, who was intimate with him, used to say that he was the best companion in Edinburgh. He was, however, not without very decided opinions, which he could express strongly. As may be supposed, he was a great personal favourite with his students. In 1811, when he had taught for fourteen years, he heard of a subscription going on among his pupils for the purpose of presenting him with a piece of plate, and put a stop to it from reluctance to burden his pupils with any avoidable expense, receiving instead "a very spirited and well-written address." About eighteen months before his death, when his connexion with teaching was about to cease, he at last yielded to the kind wishes of his pupils, who resolved to subscribe for the purpose of procuring the bust, which now stands in his museum, and is reckoned an excellent one. In his prosperity Dr Barclay did not forget those who had been kind to him in his youth, and he was always ready to help on young men struggling with difficulties. "His liberality, indeed," says Sir George Ballingall, "to young men struggling with adverse fortune and straitened circumstances, was one of the most conspicuous traits in his character, and was thought by some to have been carried even to a fault. He gave young men gratuitous admission to his own lectures; and has even been known to furnish them with the means of feeing other teachers.[1]

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by Mitchell. The walrus presents some curious exceptions to the accuracy with which the skeletons are mounted. The enigma of three phalanges, besides the "metacarpal" and "metatarsal" bones, in the internal digits, is partly explained by finding that one of the three, in both of the fore-feet, is made of wood. The scapulæ are, or were, the very differently shaped scapulæ of a cetacean. Dr Barclay must have been away on one of his customary autumnal tours when his articulator indulged in these variations, which may afterwards have afforded scope for the doctor's wit. I once found a skeleton being put up partly from a bear partly from a seal. I sent to Greenland for the scapulæ of a walrus, and presented them to the College, in order that the walrus might have, if not its own shoulders, at least those of a walrus.

[1] His liberality in this respect was not unfrequently so much abused that he was obliged to check it. I have from Dr John Campbell a good illustration of this. Coming one day into the shop of Mr L—, a well-known bookseller of his day, he was addressed with "Come away, doctor, I was just wishing to see you; here is a young man from the country to whom I would like you to give a ticket to your lectures." "Very well, Mr L—," was the doctor's reply, "if you ask it I must just do it;" and he accordingly pulled out and filled up a ticket for the youth. "Now," he said, addressing Mr L—'s shopman, "Hand me down Fyfe's Anatomy, now Bell's Anatomy," and so on, until he made up a purchase equal to the value of his ticket (£4, 4s.). Then addressing the student, he said, "Here, my young friend, is Mr L—'s present to you." Mr L— protested, but in vain, and the youth departed with both books and ticket. The bookseller would take better care the next time before he asked the doctor to present his ticket. The story illustrates both his liberality and ready wit. Dr Barclay is not the only teacher who has found even wealthy persons very ready in this easy and not uncommon way of being kind at his expense.

Dr Barclay worked on with undiminished vigour till about three years before his death, when his friends, seeing that his health had begun to suffer, urged on him the propriety of relinquishing his evening course or of handing it over to an assistant. He did not take this advice till some time after the beginning of his last session (1824-25), when he formed an arrangement with Dr Robert Knox, then Conservator of the Museum of the College of Surgeons, who became his successor. Notwithstanding the advice of his friends, he appeared to give the introductory lecture of the next session. It was too evident that his memory had failed, and it was his last appearance in the lecture room. He thus retired at the age of 65, after having taught regularly during twenty-seven years. During the winter session (1825-6) he prepared his introductory lectures for the press, and was engaged in writing the lives of Aristotle and Harvey, which he left incomplete. His strength becoming exhausted, accompanied by a paralytic attack which affected his speech, and paroxysmal attacks of dyspnœa, he died on 21st August 1826, aged 66.

In estimating the merit and reputation of Barclay, it must be borne in mind that over fifteen years of his available life had passed before the work of his life began, and that he stood on his own footing as a teacher, unconnected with institution or school of any kind. He was a peaceable, modest man, full of quiet humour, genial and kindly, with a decided genius for anatomy, at which he worked enthusiastically, thoughtfully, and laboriously. The man is seen in his two favourite authors, Aristotle and Harvey, whose lives he tried at the end to write—the old classic philosopher with a side for natural history, and the modern anatomist and physiologist with a turn for the philosophical. His works also illustrate his qualities and habits—his Anatomical Nomenclature, the classic; his Lite and Organization, the speculative; his Muscular Motion, and Arteries, the laborious observer; while by the industry of his hands, in leisure hours, he was able to leave behind him the largest museum ever formed by any one medical teacher in Edinburgh. But the greatest of all his works, though after one generation the least traceable, was the faithful discharge of his duties as a teacher of large numbers of young men, over a long series of years; not only by the efficiency and high quality of his teaching, but by the no less important though silent influence of his example and character.

(*To be continued*)

Part Second.

REVIEWS.

Gleet: its Pathology and Treatment, with a Memoir on the Treatment of Stricture of the Urethra by Subcutaneous Division. By HENRY DICK, B.A., M.D., Surgeon to the National Orthopædic Hospital. Second Edition. London: R. Hardwicke: 1866. Pp. 113, 8vo.

A TREATISE on Gleet by the surgeon to the National Orthopædic Hospital is almost as unexpected a pleasure as a treatise on ecclesiastical vestments would be from the pen of Dr Cumming; but our surprise is to a certain extent diminished when we find from various quotations in the text (pp. 66, 95, 109) that the treatment by bougies is the *orthopædic* treatment of gleet. Some idea of the nature of this treatment may be obtained from the following brief quotations:—

"My series of metallic bougies are 60" (*sic*) (p. 72).

"The same size can serve for several seances, but I find it advantageous[1] to use it for six or eight days, and then to proceed to a larger size."

The duration of treatment varies from five or six weeks (p. 68) to three or four months (p. 68), or five or six months (p. 82). If the success of treatment be *always* equal to the dexterity of the surgeon, Dr Dick's patients are indeed fortunate, as may be seen from the following series of quotations:—

> "I have myself rarely seen in my practice of late years this form of fever (urethral fever), and I certainly ascribe it to my very careful and discriminate use of the bougie" (p. 46).
>
> "During the last eight years I have never had one case of orchitis, and I can ascribe it only to the strict precautions of my proceedings" (*sic*) (p. 74).

All honour to the moral courage which, when the interests of suffering humanity are at stake, is able to forget its own natural modesty, and express itself in words like these—

> "I may here remark that the methods of injecting which are fully described in different parts of this pamphlet are the only efficacious means of using those agents, and that all other modes known to me are faulty."

Among other equally interesting and remarkable pathological novelties, the following deserves quotation, exhibiting, as it does, the author's powers of generalization, his natural modesty when not absolutely certain of his point, and bearing, as it does, on recent fiscal alterations:—

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[1] To whom?—P. D.

> "In countries where a great deal of beer is consumed it is generally observed gleet is more frequent, and gonorrhœa also much more frequently assumes the chronic form. I am not able to draw with certainty the conclusion that beer alone produces this chronic state. I think the climate has something to do with it; and in damp climates, as England, Belgium, and Holland, the same disposition has been observed; but I have certainly remarked that patients affected with gonorrhœa or gleet have it increased after the use of beer, and gonorrhœa is more inclined to become chronic when the patient indulges in drinking beer during treatment. I recommend, therefore, the use of the light red French wines; and for the poorer class the use of gin and water is preferable to the use of beer" (p. 47).

Some of the practical directions to the young practitioner may be valuable, but may be found rather difficult to follow. What will he make of this one?—

> "If, during the exploration, fainting comes on, the explorator is to be withdrawn, the patient should be placed in a current of air, cold water, and inhalation of ammonia be resorted to, and with the recumbent position he will soon be restored" (p. 33).

Which of the parties has fainted? what is to be withdrawn? does a current of cold water mean the shower-bath? or is the cold water to be inhaled?

To the severe classical beauty of the author's style and language the following phrases and words bear witness: "Perturbation of miction, *suspensorium*, *prostata*, *prepucium*, *stranguria*, a drop of purulent mucous." The italics are our author's.

A chapter on the subcutaneous division of stricture concludes the pamphlet. Being unable, after severe mental exercise, to follow the author's description so as to understand his procedure, it is beyond our criticism. The four cases, however, which are recorded are not so encouraging as to make our regrets at all poignant. All four had shiverings, and in the fourth, the surgeon tells us

> "On the next afternoon, not being able to pass any sized catheter whatever . . . . I recommended the patient to make water without any instrument, and, after a little while, he made a large quantity of water naturally, which caused severe scalding at the cut spot."

Army Hygiene. By CHARLES ALEXANDER GORDON, M.D., C.B., Deputy Inspector-General of Hospitals, Army Medical Department, Member of the Sanitary Commission for Bengal, Author of "China from a Medical Point of View," etc. 8vo, pp. 532. John Churchill & Sons, London: 1866. Lepage, Calcutta.

THIS large handsome work is intended as a manual to convey to army medical officers directions as to the details of their duties under varying conditions of the service. As Dr Gordon hardly touches on the subject of military *surgery* properly so called, and does not allude either to nosology, diagnosis, or iatreusis, he has abundance of space for the still more important subject of prophylaxis. To teach how men are to be kept healthy, how, by proper diet, recreation, and attention to sanitary precautions, disease may be warded off, rather than how sick men may be cured, is the author's aim. He tells us how field-hospitals are to be selected and how the wounded are to be carried off the field, but wisely stops there, and does not confuse or overload the work with any surgical details.

The work is divided into thirty-eight chapters, the arrangement of which is briefly as follows:—After some introductory remarks, the circumstances of a soldier's life as they bear on his health are discussed, including drills, parades, recreation, crimes, and punishments. Then his food is considered, marches by land, transport by sea, campaign arrangements, hospitals; means of conveyance for sick and wounded in France, China, Africa, America, India, and New Zealand; malaria, epidemics, scurvy, hill stations, barrack arrangements, clothing, water, air, ventilation, overcrowding, disinfectants, slaughter-yards, bakeries, inspections.

These various subjects are fully gone into in a plain commonsense style. A professed book-maker might have made the work more interesting, but possibly at the expense of clearness and brevity. A copious index and table of contents render reference very easy. On the whole we believe this work will excellently fulfil the author's intention, and prove a useful manual for reference on all subjects connected with Army Hygiene.

On some Varieties and Effects of Cancerous Disease of Bone. Liston Clinical Prize Essay, University College, 1860. By WILLIAM HICKMAN, M.B., F.R.C.S., Surgeon to the Western General Dispensay, etc. Pp. 47. Robert Hardwicke, London: 1865.

WE are told, in the preface, that this little essay formed a portion of the papers sent in for the Liston Clinical Prize in 1860, published after an interval of five years still in their original condition. There are three distinct little papers. The first and longest consists of observations on the subject of spontaneous fracture of bone occurring with the cancerous diathesis. These are founded on a case observed by the author, which has some points of considerable interest. A man dying of cancer of the liver, breaks his arm by a slight exertion. He is very much emaciated, so the fracture is easily made out, and there is *no* thickening of the bone whatever. He died in six weeks, but before death the limb had become tolerably firm, a large tumour (cancerous) having formed round the broken ends.

The second paper records a case of scirrhous disease of bone in a yearling filly.

The third gives the history of the case of a girl of 18, who suffered from two rare maladies:—1*st*, primary encephaloid of the periosteum of the right ilium; and 2*d*, sciatic hernia on the left side, the sigmoid flexure protruding in the form of a tumour of considerable size.

The essay is profusely illustrated by woodcuts, and lithographs by Tuffen West, from drawings by the author.

Surgical Appliances and Minor Operative Surgery. By THOMAS ANNANDALE, F.R.C.S. Edin., Lecturer on Surgery, etc.

A Manual of the Operations of Surgery. By JOSEPH BELL, F.R.C.S. Edin., Lecturer on Surgery.

WE have much pleasure in recommending the above works to the notice of our readers. They possess a special interest to the profession and students in this city, as each is the production of an Edinburgh surgeon and a lecturer on surgery. The matters treated of in the two books are, however, entirely different, Mr Annandale confining himself to minor surgery, while Dr Bell describes all the important surgical operations. Without going into details we can express a very favourable opinion of both; the information is sound, and is conveyed in a clear and practical manner, while additional value is given to the text by the introduction of well-selected illustrations.

Part Third.

PERISCOPE.

PRACTICE OF MEDICINE.

CONSIDERATIONS RESPECTING CHOLERAIC COLLAPSE. BY C. HANDFIELD JONES, M.B., F.R.S.

THE condition of choleraic collapse must be admitted, I think, to be essentially independent of any evacuations from the blood. Setting aside cholera "sicca" (so-called), it certainly seems to occur when there is no possibility of any material loss of fluid; and, on the other hand, is not observed in certain instances of profuse intestinal discharge. In the cold stage of malarious fever, and more rarely in typhus, we meet occasionally with very perfect examples of choleraic collapse, understanding thereby blueness of the surface and icy coldness, shrinking of the body, failure of the heart's action and pulse.

Different views may be taken as to the essential cause of the above-mentioned symptoms. We may hold with Dr Johnson that they all depend on spasm of the small pulmonary arteries causing arrest of the blood-flow through the lungs; or with Dr Parkes, that the obstruction giving rise to them is the result of deposition of fibrine in the capillaries and pre-capillary vessels; or with Briquet and Mignot, that they are the result of the hyposthenising toxic influence acting principally on the heart and cerebro-spinal nervous system. Lastly, it may be held, that the algide phenomena are produced in the same way, I do not say by the same agent, as they probably are in pernicious ague; viz., by a morbid stimulation of the vaso-motor nerves, especially of the limbs and surface; or, according to a modification of this view, that they depend on severe irritation of the intestinal nerves or ganglia.

In Dr Johnson's theory, there is much that is very truthlike, and perhaps it expresses truth, but not the whole. The chief objections to it seem to me those which arise from a consideration of the events of fibrinous deposition in the heart, which have been so ably investigated by Dr Richardson. Here, supposing the obstruction to be on the right side, we have great and peculiar dyspnœa, often tumultuous action of the heart, wandering of the mind, from failure of supply of blood to the brain, livid pallor and coolness of the surface, and more or less tendency to rupture of the air-cells, and emphysema. Dyspnœa there may be in cholera; but it is not so constant, nor so severe, as in fibrinous deposition. The inspirations taken are shallow and frequent; whereas in the latter affection they are rapid and deep. The respiratory distress, when present, is further augmented, as Briquet and Mignot state, by a tearing pain, or oppressive weight at the epigastrium, or by a sensation of pressure or constriction at the base of the thorax. This is not present in the state with which I am contrasting the choleraic phenomena. According to Dr Parkes, the respiratory murmur is altered in every case where the distinctive features of cholera are present. The inspiratory sound is lessened, becomes rougher and more bronchial, and the expiration lengthened and exaggerated. In fibrinous deposition, the breathing is full and free, as long as there is no obstruction on the left side. The muscles in the one condition are affected with cramps; in the other with restless prostration. The brain in the former, though evidently scantily supplied with blood, is able to function effectively; in the latter it fails, and the mind wanders. If the blood were prevented from reaching the lungs by spasmodic closure of the pulmonary arterioles, there would almost surely be for some time violent struggling action of the right heart. I well remember a case of malarioid fever, in which the first paroxysm set in with pulselessness and a sensation of imminent death. On auscultation, I found the heart acting violently, and was greatly puzzled to understand how, with such forcible cardiac action, there could be an absence of radial pulse. In a few hours, the pulse returned, and the hot stage set in. No doubt can exist that, in this instance, the arteries of the limbs were closed by spasm, and that the heart was struggling to carry on the circulation in spite of this obstacle. In a case recently under my care, where fibrinous deposition in the heart was diagnosed during life and proved to exist after death, the action of the organ was greatly excited. In cholera, on the contrary, though the action of the heart may be sometimes rapid and tumultuous, yet for the most part enfeeblement and failure are the prominent phenomena. The surface of the body is notably bluer and more icy cold in cholera than in fibrinous deposition in the right cavities. Pulmonary collapse is not a feature of the latter condition any more than interlobular emphysema is of cholera.

The foregoing seem to me to constitute substantial differences between the two pathological states, which should not exist if the theory in question were correct. It has, however to be remarked, as a notable point of resemblance, that in fatal cases of both the lungs are found anæmic, and that inflammatory affections of the lungs previously existing have been considerably diminished after the supervention of both. This, however, might ensue whatever was the cause of the arrest of the blood-flow.

A weighty objection to Dr Parkes' theory seems to me the rapid though temporary improvement obtained by injections into the veins. These could not remove capillary emboli.

Against Briquet and Mignot's theory, it must be considered that hyposthenisation of the heart and cerebro-spinal nervous system is what the miasms of typhus and typhoid fever effect; but their symptoms are very unlike those of the algide stage of cholera.

Whatever opinions may be held as to the degree of real affinity existing between cholera and the pernicious malarious fevers, it cannot be questioned that the causes, supposing them different, produce almost identical results in the algide period, the more peripheral parts being icy cold and devoid of circulation in each, while the internal are the seat of active hyperæmia and congestion, and have their temperature increased.[1] In both disorders there may be profuse evacuations or none. Now, it not unfrequently happens, that a morbid state may be produced by several distinct causes, yet be to all appearance identical from the operation of each. Thus, erysipelas certainly may arise from contagion; but there can be no question it often is set up quite independently. In our treatment of it, however, we have regard solely to the existing condition and not at all to the cause. So I hold it to be with respect to cholera. Its cause may be more or less different from that of pernicious fever; but the morbid processes may be almost or quite identical; and where the results are so similar, we can hardly fail to derive instruction with respect to one from a careful examination of the other.

In endeavouring to frame to ourselves a *rationale* of the algide condition in malarious fever, we may observe: 1. That there is almost a certainty that the poison acts especially on the nervous system, both on its cerebro-spinal and sympathetic departments. 2. This action seems to be at first more exciting and subsequently paralyzing; the former mode being more apparent in the peripheral parts, the latter in the abdominal viscera. The rigors may be viewed as indications of excitement in the spinal cord, and it is worth remarking that they do not occur in palsied limbs. The vaso-motor nerves may be so excited that the radial pulse is obliterated during the entire cold stage. 3. The enfeeblement of the heart's action may be well accounted for by a similar state of the plexuses supplying its nutrient arteries. 4. The peculiar coldness of the surface is to be accounted for by the contracted arteries ceasing to transmit a supply of aërated blood, and probably also by a special influence of the excited nerves on the nutritive vital actions of the part. I am the more inclined to adopt this latter view, as the rise of temperature, which has often been noticed after death, seems necessarily to imply the cessation of some force which depressed the calorification during life. As the phenomenon occurs some time after death, it is of course independent of any movement of the blood. 5. The blueness depends on the same cause; viz., the want of an efficient *vis a tergo*, in consequence of which the capillaries and small veins become filled with stagnant corpuscles of a dull red colour. This condition may be seen, not unfrequently, perfectly developed in the frog's web, as is well described in the following quotation from Mr Wharton Jones's paper, p. 21:—"In a third case, the two larger webs of a frog's foot were very much congested, the blood stagnant in a great many capillaries, and flowing slowly or oscillating in others. The flow in the veins sluggish. The arteries all more or less constricted. Sometimes one artery would be seen to dilate a little; and, in proportion as the flow of blood in it thus became free, the circulation in the capillaries to which it led was reestablished. The application to the web of solution of salt was followed by uniform dilatation of the arteries, a brisk flow of blood, and dissipation of the congestion." Section of an artery has nearly the same effect, as constriction, congestion, and stagnation, take place in the venous radicles and capillaries connected with the lower end. The effect of cold in producing the above-described condition is notorious, and was well exemplified in the following observation. An ice-bag had been applied for some length of time over a pulsating abdominal tumour, and had produced dusky venous redness of all the area of integument where it lay, while the surrounding surface was quite pale.

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[1] Dr Macpherson states, that late experiments in Paris show that the temperature rises to 103° in the rectum. (P. 53.) Similar observations have recently been made in London. (Vide *Lancet*, August 18, 1866.) The temperature of the vagina in one instance was 102°·4.

A warm finger was laid on the discoloured part, and immediately the dusky tint gave place to the natural pallor. No one can doubt that, in this instance, the arteries were constricted by cold and relaxed by warmth, just as one may see them to be under the microscope in transparent parts. Other more obscure causes act occasionally in the same way as cold. Thus, it is stated in the *Echo Med. Suisse*, that a girl, aged 17, without known cause, felt violent pain in the hands; the four fingers of the right and two of the left became slate-coloured, cold, insensible—in short, exhibiting all the symptoms of incipient gangrene. Movement was almost entirely abolished in these fingers. The induced current was applied, giving rise at first to increased pain, but soon arresting the sufferings of the patient. After ten or twelve sittings, at about the end of a week, the sensibility, the normal temperature, and colour as well as motion were restored. The epidermis came off to the extent of the first appearance of the gangrene. It seems impossible that the Faradisation could have availed anything in this case, if the vessels had been obstructed by emboli; whereas it is intelligible that it might have been very efficient in removing a state of spasm. In my work on *Functional Nervous Disorders*, I have referred to some other instances of the same kind, which are, I think, sufficient to show that algidity may occur as a local phenomenon, and may, therefore, be independent of any intra-thoracic derangement.

It appears to me to be a question of great interest why the loss of *vis a tergo* so often conditionates stagnation of blood in the capillaries and venules. That it does not do so constantly is certain. I have repeatedly seen in the frog's web whole tracts of capillaries, empty apparently, and devoid of corpuscles when the arteries communicating with them were constricted. The capillaries themselves remained perfectly patent. It is said that frost-bitten parts become of a waxy white; while less intense cold produces, we know, a dull red. This might suggest that in the former case the arteries were more completely constricted than in the latter. I doubt, however, very much whether this is a sufficient explanation; and I am rather inclined to believe that the attractive force of the tissue through which the vessels pass has much to do with the result. In inflammatory stasis it certainly has.

Considering the intimate relation of malarious fevers to the neuroses, of which no practical man can doubt, the unquestionable control also of the nervous system, especially its vaso-motor department, over calorification, the evidence afforded by the microscope of the effect of constriction of the small arteries, and the nature of the remedies which prove beneficial, it seems to me that there is strong ground for believing that the *rationale* above offered of the causation of the algide condition in malarious fever is in the main correct.

The lesions revealed by *post-mortem* examination are great engorgement of the large veins and of the right cavities of the heart, œdema of the lungs, or extravasation of blood into their tissue, formation of pigment in the blood, and deposition of it in various parts, a pale and flabby state of the cardiac muscle, which is stated to be much softened in the algide choleraic forms.

We may next consider whether there exists any sufficient reason for refusing to class the algide condition of cholera with that above noticed. The phenomena during life scarcely differ, except in the character of the evacuations, and in their resisting, in the case of cholera, the administration of quinine. Neither of these seem to me absolutely distinctive. The evacuations in both cases are copious outpourings of serous fluid; and the rice-water appearance is only the result of the admixture of fibrinous flocculi or epithelium, and is perfectly imitated in some instances of hypercatharsis from drugs taken in a poisonous dose, as croton-oil and colchicum. If the contagious quality of the fresh evacuations was demonstrated, it would be a strong point of difference. The inutility of quinine in established cholera does not appear to me surprising. Bark has often failed in pernicious fever; and Livingstone found that quinine did not avail in the endemic fevers of the Zambesi. The chief peculiarities which dissection discloses in fatal cases of cholera are said to be the bloodlessness of the lungs, their collapse, and the quantity of blood which is retained in the pulmonary arteries, and pours out when they are divided. Now, these features do not appear to be constant by any means. Annesley says, p. 111: "The lungs were always completely engorged with blood of a pitchy or black appearance." This evidently has reference to cases dying in the algide stage, as well as subsequently, and cannot, I think, possibly be meant to describe only the condition of the larger vessels. Leudet, in the majority of the cases fatal in the algide stage, found that no other morbid change existed than engorgement of the lower and posterior parts of the lungs with dark blood. In some instances, this was so complete as to cause portions of the pulmonary tissue to sink in water. In certain cases, the pulmonary tissue throughout was full of dark blood. Reinhardt and Leubuscher state that the lower lobes (that is, I should say, fully one-half of the lungs) were in general full of dark blood. Virchow states similarly, "The lower lobes were for the most part much congested." These quotations are taken from the Report of the College of Physicians. Parkes writes: "The quantity of blood in the substance of the lungs was considerable in three cases; in one there was extravasation of blood in the lower lobe of one lung; in six cases, there was a considerable quantity in the vessels of the lower lobes, but none in the upper; in ten cases, the quantity was small; in eleven cases, there was no blood in the minute texture of the lungs." According to this statement, the amount of pulmonary congestion was notable in ten out of thirty-one cases. Again, he says, p. 20: "In other cases, there is more blood in the minute structure, a corresponding dark colour of the lung, and a variable amount of frothy serum." In some recent reports of autopsies of cholera patients dying in the algide stage, it is mentioned that a woman under Dr Moxon's care died after eighteen hours' illness; the lungs were considerably engorged with dark blood, and all the heart-cavities contained white gelatinous clots (*Lancet*, July 28, 1866): also, that a case died in collapse at the Middlesex Hospital, where, at the autopsy, both lungs[1] were found much congested (*Lancet*, Aug. 4).

These statements seem to me to prove that absence of blood from the lungs cannot be considered an essential condition in fatal cholera. It is surely not so constant an occurrence as blueness and coldness of the cutaneous and adjacent surfaces. Collapse of the lungs cannot be essential to fatal cholera, as it has been found altogether or nearly absent in autopsies. Out of thirty-nine cases examined by Parkes, this condition seems to have been marked in seventeen; in eight it was slight; and in fourteen it was more or less prevented by old adhesions. In a recent fatal case at St Mary's, I am informed, the lungs were not collapsed more than in death from other diseases. Moreover, the same authority tells us that, "almost till the last moment, the patient can breathe deeply, if told to do so." It is probable, therefore, that collapse of the lungs is rather a *post mortem* phenomenon than an *ante mortem* condition; and that it is simply the result of the unopposed action of the elastic fibres of the tissue. Perhaps the anæmia of the lungs may be due in some measure to the contraction thus taking place, which squeezes the blood out of the capillaries and smaller vessels into the larger.

Retention of blood in the pulmonary arteries and right side of the heart is a striking feature in many instances of cholera, perhaps in the great majority; and, taken together with the more or less bloodlessness of the lungs, it appears to afford a good deal of *appui* to the view that the blood is prevented from passing onward by spasm of the smaller pulmonary vessels. The theory referred to represents this spasm as the essential condition of the arrest of the circulation. It must, therefore, be of constant occurrence; and the tokens of its existence ought to be constant also. But Dr Parkes states that, "in other cases, however, the lungs are also excessively shrunk, and contain no blood or serum; yet, on cutting through their roots, no blood escapes, and all the cavities of the heart are nearly empty. There is, therefore, no evidence of obstruction." In Briquet and Mignot's experience, the signs of pulmonary artery obstruction (viz., accumulation of blood on the nearer side of the barrier, and its absence on the distal) do not seem to have been at all constant. They write: "Sometimes the cavities of the heart were engorged, especially the right. The left cavities, however, had no tendency to emptiness." Dr Andrew states, in his account of a case which died at St Bartholmew's, that both pulmonary arteries and pulmonary veins contained a considerable quantity of blood, and so did the right and left cavities of the heart. Of another case, he states that both sides of the heart contained clots of dark blood and decolorised clots; while the lungs, which were emphysematous, contained a fair amount of blood. (*Med. Times and Gaz.*, July 21, 1866.) In the record of a case like the two preceding, dying in collapse at the German Hospital, it is stated that the pulmonary vein was quite filled with thick dark blood; the lungs were dark red. (*Med. Times and Gaz.*, Aug. 4, 1866.) If spasm of the pulmonary artery existed sufficient to obstruct seriously the current of the blood, there would surely be visible distention of the jugular veins during life, at least in cases where no considerable evacuations had taken place. No such appearance, however, is mentioned in the descriptions extant.

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[1] It ought, I think, in fairness to be stated that, in some instances of complete obstruction of the pulmonary artery, the lungs are found much congested. (*Vide* Meissner's Report—Schmidt's *Ber.*, vol. cxvii. p. 235.) This goes to assimilate the choleraic condition with that of right side fibrinous obstruction.

From the above evidence, I feel much inclined to admit the probability of choleraic collapse being produced very much in the same way as that of algide fever. I think it not unlikely that the pulmonary arteries may participate in the constriction which affects the systemic, the vaso-motor nerves of each being affected alike; but I believe the chief seat of obstruction and arrest is in the aortic, and not in the pulmonary ramifications; and that the affection of the latter is non-essential. As to the argument, that, if the arrest were in the systemic vessels, the left side of the heart and the arteries would be gorged, it does not seem to me of weight. We see and know that, as a consequence of arterial constriction, the capillaries and veins become engorged: and if the blood accumulates, as we know it does in the larger and smaller veins, it is no wonder that it is absent from the left cavities and their afferent channels.

Although we are not able to consider the physical changes produced in cholera-blood as the chief cause of the arrest of the circulation, yet we cannot but regard them and those taking place in the tissues as exponents of the action of an injurious influence, which, by gravely interfering with the several nutritive processes, aids greatly in deranging those conditions on which the free transit of the blood through the capillaries depends. The small intestines are the chief focus of these lesions, where we find not only vast effusions of serosity taking place into the cavity of the canal from a vascular surface denuded of its epithelium, but also infiltrations of its coats with exuded fluid, and not unfrequently more or less extensive hæmorrhagic extravasations. Recent catarrhal irritation, with increased epithelial exfoliation, was found constantly in the urinary passages by Virchow. The uterus was commonly hyperæmic, and often presented small extravasations of blood on its inner surface, or in its tissue. Similar extravasations were found in various parts—the pericardium, the endocardium, the lungs, the pleuræ, the spleen. Their occurrence can only be referred, I think, to an altered condition of the walls of the capillaries, as there certainly must be a considerable decrease, and not increase, in the amount of intravascular pressure, except, perhaps, in the case of the vessels of the small intestines. The kidneys presented indications of the commencement of morbid changes, which were more developed after reaction took place. The pneumonia, and engorgement or œdema, which was so frequently observed during this stage, must be considered to have had its origin in the loss of capillary tone or retentive power, of which there were sufficient traces during the algide stage. The softening or alteration of the muscular tissue of the heart, which was observed by Briquet and Mignot in four-fifths of the cases fatal in the algide period, is a strong evidence of the injurious influence of the poison on the tissues, and must be taken into account in estimating the immediate causes of the fatal event. It is also to be noted, as showing the tendency to cardiac paralysis, that Parkes found, in some instances, the ventricles flaccid and inexcitable soon (about one hour) after death, though they subsequently contracted firmly. The paralysis in these instances was probably of the inhibitory kind. Owing to its natural weaker conformation, it is conceivable that the right ventricle might be paralyzed before the left, as the above-mentioned writer suggests. The dark, tar-like, wasted condition of the blood, is not referable, I believe, to the abstraction of water and salts only; for it is noted as having these qualities in Dr Stokes's case of algide typhus fever, where there were no unusual evacuations. Its tendency to deposit fibrine, as well as its other peculiarities, seem to me more probably the result of the direct action of the poison, than of its imperfect aëration In a case mentioned in the *Medical Times and Gazette*, July 28, it is stated that a fibrinous mass, of the size of a cherry, was found in the right lung.

The general tenor of the above facts is to show that the operation of the poison is by no means limited; that it affects the blood, the arteries, the capillaries both pulmonic and systemic, the mucous and serous membranes, and glands. From this I should conclude that the morbid process is not confined to any one region, but affects many, probably with varying degrees of intensity in different instances.

Although the above exposition seems to me to be the nearest the truth, it ought, I think, to be considered also whether in many cases, perhaps more especially in some epidemics, the symptoms may not be dependent, in a greater or less degree, on irritation reflected from the morbidly affected intestine. In a case of poisoning by croton-oil, the patient having at the same time typhoid fever, the symptoms, as Dr Macpherson remarks, approach wonderfully close to those of cholera;[1] and it is especially observable that the algide phenomena were apparent three-quarters of an hour before purging commenced. The depression of the circulation which occurs in acute peritonitis, like that resulting from severe irritation of the mucous surface, is no doubt dependent on morbid impressions conveyed by the intestinal nerves to the ganglia and cord, and thence reflected on the heart and arteries. In a fatal case, I found the left ventricle quite empty and firmly contracted, just as it has been found in cases of cholera. The right was occupied by a largish fibrinous clot extending up into the pulmonary artery. It did not appear of *ante mortem* origin. The lungs were congested. The absence of abdominal pain is not an argument against this view; as we know, from observation of epilepsy, that an unfelt irritation may give rise to very severe symptoms. Cases of this nature would be more amenable to treatment than others; inasmuch as the intestinal irritation might be removed by appropriate remedies, as calomel and opium, castor-oil, etc. It is to be feared, however, that, in many cases, the heart, kidneys, and other organs, are too severely stricken in their vital powers to carry on their necessary functions, even when the irritation of the intestinal nervous structures is removed.

In conclusion, I may say that I regard cholera as by no means a single and uniform morbid process, but one which consists of several varying elements. These may be enumerated, as cardiac paralysis, constriction of arteries, alterations in the blood and capillaries, intestinal irritation. They may be variously developed in different instances, some may be more marked in one case, others in another, and remedial means should be varied accordingly.—*British Medical Journal.*

CHOLERA TYPHOID. BY DR LYONS.

THE patient having passed through the perils of the periods of invasion and collapse, has yet, in many instances, to run the gauntlet of dangers which seriously threaten life, and, in not a few instances, prove fatal. In favourable instances, and in a far greater proportion in some epidemics than in others, the patient who recovers from cholera passes at once and *frankly* into a state of complete convalescence, and the man who is to-day in the fully-developed blue stage of cholera, may be within three days up and able to resume his avocations. In other instances, convalescence is established as a slow and gradual process, the patient does not at once shake off all appearances of the collapsed stage, and in a day or two it will be found that he has glided into a condition of secondary pyrexia, marked by quick and irritable pulse, foul tongue, and hot skin. More or less tendency to diarrhœa, with pain and other symptoms of intestinal irritation, are now manifested, and on careful palpation the abdomen is found hot, and gurgling is detected in the ilio-cœcal region. In cases likely to prove fatal, diarrhœa becomes now a constant symptom ; thirst, depression, uneasinese, if not actual pain, in the bowels is complained of; there may be wandering or delirium, and the general aspect and condition of the patient are such as to produce the closest possible similarity to, if not identity with, true typhoid or enteric fever; and in fact pathological anatomy reveals to us that a lesion is now progressing in the intestine, in all essential respects the same as that which characterizes the fever in question.

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[1] Dr Greenhow has recently recorded a case in which they were absolutely identical even to the rice-water evacuations.—(Vide *Medical Times and Gazette*, August 11, 1866.)

Pathological Anatomy of Cholera Typhoid.—It has been seen that one of the most frequent lesions observable post mortem in fatal cases of cholera is a loaded and turgid state of the solitary and aggregate follicles of the small intestine. The general colour of the jejunum and ilium is that of a pale rose pink; conspicuous upon this ground will be noticed, more or less prominently so in different cases, a multitude of little granular bodies varying in size from a pin's head to a couple of lines in diameter, of a dirty cream colour, but occasionally whitish. These will be found to be the solitary glands, surcharged with a quantity of matter, which, when viewed under the microscope, exhibits an infinite number of amorphous granules, but no formed elements. The patches of Peyer will be found to exhibit a similar condition, and in the lower few inches of the ilium, both the solitary glands and patches of Peyer are usually very conspicuous, being distinctly elevated above the surface by the amount of deposit with which they are overloaded.

That the condition here described is present in a large majority of cholera cases Dr Lyons has established by numerous examinations in various epidemics at home and abroad.

In those cases which prove fatal in the primary stage of cholera, time is not allowed for the development of further changes by which any process of elimination could be attempted to rid the glands of the dirty creamy deposit with which they are so remarkably impacted; but when the patient survives the period of choleraic collapse, he is now, *quoad* the intestines, in the predicament of an individual in that stage of typhoid fever in which deposit has taken place into the solitary and aggregated glands.

That a rapid and safe process of softening of the deposit and its speedy elimination without further mischief to the intestine, is accomplished in numerous instances, we find ample proof in the rapid and complete convalescence, without further bowel irritation of the slightest kind, which is to be observed in a large proportion of the recoveries from cholera in many epidemics.

In other instances, on the contrary, the period of recovery from the acute stage of cholera is marked by the accession of the new symptoms of pyrexia and bowel irritation already adverted to. The patient in cholera typhoid is now in identically the same pathological predicament as the patient in true or idiopathic typhoid: both have the same dangers to face, and in both the progress of the lesion in the intestine is the same. A process is now established for the elimination of the creamy matter in the intestines. It may be convenient to recapitulate the various modes by which Nature effects the elimination of deposit from the intestinal glands, whether in idiopathic or in cholera typhoid:—

1. By endosmosis, and by the inherent tendency in all forms of low exudation to undergo mechanical disintegration, the deposit in the glands becomes gradually softened, and under the influence of the gentle pressure constantly being exercised upon it by the constrictive and extrusive action of the circular and longitudinal fibres of the muscular coat of the intestine, it becomes

gradually forced out of the glands. This may be regarded as by far the safest to life of all the modes of elimination of glandular deposit in the intestines, and the possibility of its accomplishment and of facilitating its being brought about should ever be uppermost in the mind of the practitioner in dealing with such cases by food or medicine.

2. The pressure of the matter deposited in the glands acts, in many cases, as an irritant on the surrounding tissue elements; increase of vascular action is the result, and soon a process of ulceration is set up; the deposit is broken up and extruded, but there remains a cup-shaped ulcerated depression, the further extension of the destructive agency of which it is, in many cases, found impossible to check. Ulceration of the intestine in the site of a previously over-charged gland, or patch of glands, is now established. Its results may be (*a*) gradual extension through the basement structures of the membrane and the muscular coat until it reaches the peritoneum, in which it may, without perforation, set up inflammatory action, or, by perforation, lead to general peritonitis and death. (*b*) The ulcer, in its progress laterally, may open a vessel and lead to alarming, if not fatal, hæmorrhage. (*c*) The presence of any considerable number of ulcers will lead to constant irritative diarrhœa, under which the patient dies of exhaustion. (*d*) Ulceration may end in favourable cicatrization (as shown by Lyons and Aitken.)

3. In cases of a very extreme amount of deposit, the vessels leading to the glands become choked up, death of the tissues and sphacelus of a patch of Peyer, with fatal issue of the case, will be the necessary result. This latter condition, rare in typhoid, has not been verified in the cholera typhoid.—*Medical Press.*

THREE CASES OF ROSEOLA CHOLERAICA.

THREE cases of roseola choleraica have been observed in the Limehouse District Cholera Hospital, in two of which it is quite certain that no opium had been given to the patients; while in the third, if any had been given, it was before admission, and must have been at the least five clear days before the appearance of the rash. It will be noticed also that the treatment of all the cases was different, so that no one medicine could have been the cause.

The first case, Esther H——, aged forty, residing at No. 10 John Street, Shadwell, was admitted in a state of collapse, into which she fell on the first day of her illness. She was blue, cold, and pulseless, with wrinkled skin, cramps, and rice-water vomiting and purging. She was treated (by Dr Heckford) with drachm doses of Rubini's tincture of camphor till reaction set in, which happened in about six hours. After this she had no other medicine, but was treated dietetically. On the tenth day the roseola appeared, slightly on the face, freely on the upper extremities, shoulders, and chest, and less abundantly on the buttocks and lower limbs. It was raised, patchy, and much like red urticaria, except that there was no tingling or itching. In three days it subsided, and she made a good recovery. The skin desquamated after this. The urine was albuminous from reaction till after the subsidence of the rash.

The second case was a male infant, aged fifteen months, who was also admitted on the first day of attack, in a state of extreme collapse, with well-marked cholera symptoms. This child (J. G——) was at the breast, and was attacked about the same time as his mother, who was pregnant (three months and a-half), and who died in the hospital after abortion. Dr Woodman gave him one five-grain dose of quinine, after which reaction set in, and he had no further medicine. The corneæ began to slough on the fourth day, but this was treated by extra nourishment, without medicine; and his convalescence was uninterrupted, except by the appearance, on the sixth day, of a roseolar eruption, very similar to that in the last case, but less raised. It subsided in three days, and was also followed by desquamation.

The third case (Susan H——), a woman aged twenty-nine years, was admitted on the seventh day after being attacked by cholera. It is believed that the previous treatment consisted of calomel in rather large doses. Her friends, to relieve abdominal cramps, had applied turpentine, and employed friction so freely as to produce a slough of the abdominal integuments. Her condition on admission was as follows:—Mouth sore; bed-sores threatening on all the prominent parts of the body (sacrum, shoulders, elbows, etc.); pulse 100, very feeble; respirations, 26 per minute; temperature of axilla, 96·5° F.; thirst extreme; vomiting persistent, and stools still much like rice-water, but with a slight greenish-yellow tinge; urine scanty and albuminous; and she suffers a good deal from cramp-like pain in the epigastrium and abdomen. To relieve her pain, and as a general sedative—opium being inadmissible,—she was treated with chloroform (this was the only medicine, except two doses of carbonate of soda); an appropriate bed and good diet, with soap plaster on leather to defend the skin where most exposed to pressure or friction. On the eleventh or twelfth day she also was attacked with roseola, the temperature rising simultaneously to 99·5° F.; pulse, 120; respirations, 30. The rash in her case was like the preceding, except that the lower extremities were most affected, and it was noticed to be discrete, or at most in patches, everywhere but on the hands and feet, where the redness was general. It was attended with a little tingling or smarting, but no itching. After three clear days it subsided, and was followed by desquamation, or rather peeling of the skin in large pieces. After this, the urine became free from albumen.

In all these cases the urine exhibited a great number of epithelial cells, and cellular casts of the tubuli uriniferi, similar to scarlatinal urine. Drs Heckford and Woodman remarked that cholera presents several features of striking resemblance to scarlatina and measles. Its often sudden invasion, the severity of the symptoms, the albuminuria, glandular affections, sore-throat, and subsequent desquamation (which occurs slightly in many cases where there is no rash), and the microscopic appearances of the urine, are so obvious as to scarcely require notice. But it may be as well to allude to the pustular appearance of the intestinal mucous follicles, and the shedding of casts of the villi, etc., and the presence of columnar and other epithelia in the rice-water discharges, and especially after death in the contents of the bowels, as remarkably like the pathological conditions in scarlatina, which they (Drs Heckford and Woodman) believe were first pointed out by Dr Samuel Fenwick, who was lately a lecturer in the Newcastle School of Medicine. His paper on the subject will be found in the "Medico-Chirurgical Society's Transactions."—*Lancet.*

REMARKS ON THE PROGNOSIS, ETC., OF EPILEPSY.

IN making some remarks about the prognosis of epilepsy and convulsive diseases in general, Dr Althaus maintained that we had to distinguish very carefully between such convulsions as were the symptoms of actual disease of the nervous centres, and such as depended merely upon disturbances of function and the finer processes of nutrition, but existed without manifest alterations of structure discoverable to our senses. Where we had to do with convulsions which were caused by organic lesions of the brain and spinal cord, we might do a great deal to relieve symptoms, but could not hold out any hopes of perfect recovery, as we had hitherto failed to discover any remedies by which we could restore organs damaged in their coarser texture to their previous healthy condition. On the other hand, where the disease existed without any manifest structural lesions which might be considered as their cause, but was only accompanied by changes in the intimate molecular nutrition of cells and fibres, the prognosis was, as a rule, favourable, as we possessed remedies by which all the functions of the body and all the finer processes of nutrition might be powerfully influenced and controlled.

This principle, if applied to true, idiopathic, or centric epilepsy, would give us much greater hopes of obtaining curative results than had hitherto been believed. Epilepsy had been too much considered as incurable from the first, and therefore less trouble had been taken in its treatment than in that of many other diseases. Dr Althaus thought there was no doubt whatever that centric epilepsy was a mere functional disorder of the brain; for, on collecting and analyzing the post-mortem examinations recorded by the most competent observers, it appeared that, although various organic lesions had from time to time been noticed in the bodies of epileptics, yet there was no peculiar structural change constantly found in them, and that in very many instances ot confirmed epilepsy all the organs of the body had been found perfectly healthy. Such lesions as were occasionally met with were either due to complications foreign to epilepsy itself, or they were the proximate results of the fits. At one time changes in the pituitary body were believed to be constantly connected with epilepsy; but more enlarged experience had shown the fallacy of this opinion. Schrœder van der Kolk discovered in some subjects he dissected, enlargement of the capillary vessels, and granular disintegration of the medulla oblongata; but he rightly looked upon these changes, not as causes, but as effects of the attacks. We were therefore fully justified in drawing the conclusion that epilepsy was not a structural disease, but one of disordered function of the brain.

The following appeared to be the *rationale* of the epileptic attack:—A state of undue excitability was induced in the medulla oblongata. Irritation of the vaso-motor nerves, in its turn, caused contraction of the arteries of the meninges of the brain, whereby cerebral circulation was arrested, and a condition of anæmia brought about, which was the proximate cause of both loss of consciousness and of the convulsions. At first there was *tonic contraction* of the cerebral arteries, and to that stage corresponded the tonic convulsions, the tetanic rigidity of the frame; this was succeeded by *clonic contractions* of the cerebral arteries, to which again corresponded the clonic convulsions in the muscles of the body. After the clonic contractions had subsided, *paralysis* of the arterial walls was produced, to which corresponded the stage of exhaustion and prostration. Cerebral circulation was then gradually re-established, and the patient recovered either completely or partially, according as the disease was pure or complicated epilepsy, and according to various other circumstances peculiar to each case. The chief point of interest, however, was that the worst form of true and uncomplicated epilepsy existed without structural lesions of the brain, being merely due to disturbances of cerebral nutrition and circulation, and being consequently a curable disease.

There was no specific for the cure of epilepsy, nor did Dr Althaus think it probable that such a one would ever be discovered. Each case had to form a special study for the practitioner, and the result of the treatment would in a great measure depend upon the amount of skill and discrimination with which the resources of the art were brought to bear upon the individual case under consideration.

Our first object should be to do everything in our power to prevent any further attacks from taking place. Some authors were of opinion that the mere arrest or postponement of an attack was of no benefit to the patient; but he (Dr Althaus) entirely disagreed with this opinion. Observation had shown to him unmistakably that every further attack strengthened the epileptic habit, and rendered it more difficult to combat; besides which the attack generally entailed great prostration and exhaustion of nervous power. In order to prevent an attack effectually, we should for ever be on the watch for those premonitory symptoms or warnings which were present in the majority of cases, and showed that mischief in the brain was brewing. These warnings were of a very different nature. Some patients distinguished between "threateners" and "reminders." The former, which were more immediately dangerous than the latter, consisted of spasmodic sensations running upwards from some peripheral part of the body, and, on reaching the head, either caused the patient to fall down in an attack, or merely produced a sensation of utter faintness and sickness, which obliged the patient to hold perfectly still for an instant. "Reminders" might be compared to exceedingly slight electric shocks, darting forwards and backwards through the head, and never felt in peripheral parts. They did not generally usher in an attack, but showed that nervous matter was in a very unsettled condition, and that an explosion of force, in the form of an attack, might be expected at no very distant time. Other warnings which had been noticed in patients now under treatment in the infirmary were: more or less prolonged drowsiness; confusion; dizziness; twitchings of the face and arms; flushing of the forehead; great wakefulness at night; voracious appetite; beating in the shoulder-blades; an inclination on the part of the patient to hide himself; crawling sensations in the stomach; pain, burning, or tickling about the ears; sudden stoppage of circulation in the hands, which get cold and white; swelling of the lips; and certain delusions, such as the perception of bad smells which did not exist, etc. The last-mentioned symptom Dr Althaus had known to precede an attack as long as five days. If such warnings were vouchsafed to the patient, immediate action on our part was necessary to prevent an attack from taking place.

Our second object in the treatment of epilepsy should be to induce a total and permanent change in the finer nutrition of the brain and nervous matter generally, so as to remove all undue excitability, and restore their proper controlling force to the centres of consciousness and motive power. Our last, but by no means least important aim should be, to make the general health of the patient as good as possible, and to remove any sources of irritation from mind and body. Dr Althaus promised for another occasion a full description of the various remedial measures employed by him in order to attain these objects.—*Lancet.*

MIDWIFERY.

CASE OF INVERSION OF UTERUS AFTER DELIVERY. BY DR DENHAM.

OUT of one hundred thousand deliveries that took place in the Dublin Lying-in Hospital since its foundation, we have only a single instance of acute inversion of the uterus recorded. This solitary case occurred during the mastership of Dr Shekleton, and is given in the valuable report of the hospital published by Drs Johnston and Sinclair.

The subject was nineteen years of age, thin and delicate. She was delivered of her first child after an easy labour of six hours. Some slight pressure having been used by the attendant, the uterus was found suddenly to recede from the grasp, and was immediately expelled from the vagina an inverted mass, with the placenta still attached to it. The patient became pallid, almost pulseless, and exceedingly anxious; complained of considerable pain, and a sense of sinking.

The placenta was easily separated without hæmorrhage, and the uterus returned with but little difficulty in about seven minutes. No bad symptoms followed, and she was discharged in a short time, quite well.

There are cases on record where successful attempts have been made to reduce the inverted uterus after days, weeks, and years had elapsed.

Dr Tyler Smith replaced a partially inverted uterus of nearly eleven years' standing. He passed his hand, night and morning, into the vagina for several days, and endeavoured, by squeezing and moulding the uterus with the fingers, for about ten minutes at a time, to press the tumour upwards. After repeated trials, he found the cervix uteri yield, and the tumour could be sunk slightly in the os. On each occasion, after removing the hand, he passed one of M. Gariel's large air pessaries into the vagina, and inflated it to as great an extent as the patient could bear. The air pessary was worn day and night, with few exceptions. From the time it was first used the hæmorrhage ceased entirely, and the tumour became somewhat less in size. After more than a week of these proceedings the patient felt a good deal of pain through the whole of one night, and in the morning, when the examination was made, it was discovered that complete reversion had taken place.

Mr Teale has succeeded, by similar means, in a case of two-and-a-half years' standing. Dr Marion Sims, in his *Clinical Notes on Uterine Surgery*, relates two cases of chronic inversion—one of nine months' standing, in which he failed, after repeated attempts, to reduce the inversion, and was then obliged to remove the organ with the écraseur; and in the other, of twelve months' standing, he succeeded almost immediately by compression with the hand.

Without further preface, I beg leave to bring the following case under the notice of the society:—Jane Savage, aged twenty-three, admitted into chronic ward, 12th January, states that she was delivered of her first child five weeks before admission. The membranes ruptured, and the waters kept dribbling away for two days before labour set in; on the third day there was a red discharge, and labour pains came on that evening. She was weak and faint during the night, and was delivered at seven o'clock the following morning, with only three or four expulsive pains. The placenta was forcibly extracted by the midwife in about ten minutes after the birth of the child, both by traction on the cord and pressure on the fundus of the uterus. Some difficulty or delay seems to have been experienced in its removal, for the patient described the nurse as having twisted something like a cord round the wrist of one of her hands, with which she made considerable traction, while, at the same time, she strongly pressed on the belly with the other. During this time she suffered a great deal of pain, but suddenly got relief by the expulsion of a large tumour from the passage, which led her to exclaim—"Oh, Mother of God! am I going to have another!" The placenta, which was partially detached, was now entirely separated, and the uterus thrust into the vagina. The poor patient remained weak and exhausted all the day, passing from one attack of syncope to another, until four o'clock, when she was seen by the dispensary doctor, who, unfortunately, only felt the pulse and looked at the patient, but made no examination. She remained in bed for eleven days, and then got up a little every day until her admission; the doctor saw her twice, but never made a vaginal examination; in fact, he never diagnosed the nature of the case. During all this time she had a continual shedding, especially at night.

She came into hospital in a most pitiable condition,—pale, weak, and exhausted, from the combined loss of blood, appetite, and rest. In making an examination, we thought we had simply to do with a case of polypus; but on passing the finger round the neck of the tumour we could not discover the os uteri, while, at the same time, the tumour wanted the smooth polished surface generally met with in such cases; we therefore came to the conclusion that it must be a case of recent inversion of the uterus. A generous diet, with a liberal supply of wine, was ordered. Citrate of iron and quinine, with an anodyne at bed-time was prescribed, with perfect rest in the horizontal position. The poor woman greatly improved under this treatment, so that we were able to attempt the reduction on the fourth day after her admission. Having been brought fully under the influence of chloroform, she was placed on her back, with the thighs flexed on the pelvis, and the legs on the thighs. The hand was then slowly introduced into the vagina, and the fundus and body of the inverted uterus firmly grasped with the fingers and thumb. Steady gentle pressure in this way was brought to bear on the entire tumour for several minutes before any attempt was made at reduction. The tumour gradually diminished, partly from the pressure and partly from the loss of blood, which was very considerable. Pressing steadily upwards, the uterus was now felt gradually to yield, and in a short time the fundus alone remained unreduced; no amount of force, however, compatible with the safety of the organ could enable us to complete the operation, and as the patient was faint from the loss of blood, we did not consider that we were justified in making any further attempt at reduction for the present. The vagina was now syringed out with cold water, the patient was replaced in bed, and a full anodyne administered. On the following day we found her with a rapid pulse, and complaining of pain and tenderness over the uterus. Opium, with small doses of mercury, were freely administered, and linseed poultices were kept over the abdomen constantly.

The symptoms gradually subsided; and on making a vaginal examination on the third morning after the operation we were agreeably surprised to find that the fundus had spontaneously returned either by its own elasticity or the contraction of its muscular fibres. For many days we had a very profuse purulent discharge from the uterus, but the patient steadily improved in appearance and health, and was able to get up for a few hours every day at the end of a fortnight. On examining with the speculum about a week after the reduction we found the os uteri ragged and inflamed, but the sound passed up readily into the cavity of the uterus without causing much pain or uneasiness. She was discharged from hospital in perfect health, having menstruated regularly a few days before leaving. We have nothing further to add, only to express our regret that the accident was not discovered immediately on its occurrence. It is useless to speculate on the result had the fundus not gone up of its own accord after the first attempt at reduction; it is possible that a repetition of the former plan of treatment might have succeeded. The successful plan followed by Dr Tyler Smyth, with M. Gariel's air pessary, might have again been tried, but I am free to confess that the careful daily manipulation of squeezing and moulding the displaced uterus had more to do in the reduction than the air pessary, as I can scarcely believe that it could be distended sufficiently to act on the constricted portion of the uterus, which, in my case, at least, appeared to be at the upper part of the unreduced organ rather than in the portion near the vagina; but this, of course, is mere matter of conjecture.—*Dublin Quarterly Journal of Medical Science.*

ON THE TREATMENT OF THE OPHTHALMIAS OF NEW-BORN CHILDREN.
BY DR WILSON.

TERRIBLE and alarming as the disease undoubtedly is, it is satisfactory to know that it is perfectly amenable to and controllable by treatment. The principal part of the treatment consists in constant and effectual cleansings and ablutions. For this purpose tow is preferable to sponges, as the latter are liable to be used for other purposes, or by other individuals, and so to propagate the disease; the tow should be always thrown away after use. The lids should be well fomented with warm water, so as to soften the discharge which has collected on and matted together the ciliæ. The lids are then to be drawn asunder, and the discharge *effectually* wiped away from off the conjunctiva. A stream of water pressed out of the tow may be allowed to fall from some little height into the palpebral aperture. The water for this purpose may be very nearly cold. This extemporized douche will in many cases be found most serviceable, not alone in the ophthalmia of infants but also in juveniles and adults. I have seen it carried out with beneficial effects in a large number of cases by my friend M. Chassaignac, of Paris. Sir William Wilde, many years ago, had a special apparatus fixed up in St Mark's Hospital for this purpose. I order the affected eye to be cleansed every hour, and generally apply a solution of nitrate of silver (2 grs. to the oz.) every morning or every second morning, and prescribe a lotion of some astringent substance to be kept constantly applied to the eye. I would prohibit altogether the use of acetate of lead, which was first recommended in these cases by Dease, for if there be any ulceration it is likely to leave a white deposit on the cornea. The lotion should be applied by means of a single fold of fine linen or lint, which should be constantly changed or remoistened in the lotion—the effect of several folds will be that of a steam-bath or poultice, and this I would avoid. The infant's health should, at the same time, be attended to; its bowels freed by castor oil, or grey powder, with aromatic powder, or grey powder and rhubarb, etc.; and all causes likely to keep up or aggravate this disease removed. Changing the infant to another apartment will sometimes be found most serviceable. In the milder forms of disease, or when it is seen early, this treatment will suffice; but the majority of cases are not brought to us until there is great chemosis and the cornea is threatened with destruction. Here I clip the chemosis with a curved scissors, and scarify the conjunctiva of lids by lightly running the convex edge of a small scalpel across it in different directions. By this means we not only deplete and relieve the great congestion, but we also remove the pressure from off the the globe, and more particularly from around the cornea, by which its vitality is threatened. The bleeding may be encouraged by warm fomentations. My objection to leeching infants is the very troublesome and uncontrollable hæmorrhage which sometimes ensues, as well as the unsightly marks which occasionally result. In severe and rapid cases the chemosis may be clipped a second or third time in the day. The affected eye should be washed at least once an hour. I apply a strong solution of nitrate of silver, 5 or 10 grains to the ounce, to the conjunctiva, after effectual removal of the secretion, and prescribe astringent lotions. I have in a very few cases employed *lapis mitigatus*, but I prefer the solution of nitrate of silver. Lapis mitigatus consists of equal parts of nitrate of silver and nitrate of potash fused, and run into moulds. After its application the residue should be washed off with solution of chloride of sodium. I always use in these cases a solution of sulphate of atropia. The atropine solution of the *British Pharmacopœia* is objectionable in ophthalmic practice, from the large quantity of spirit contained therein, which is very painful and irritating. I now always employ the sulphate of atropia, which is readily soluble in distilled water. The object of this preparation is to keep the pupil dilated, whereby the iris is prevented to a certain extent from prolapsing through the cornea in case of a perforating ulcer, or even if recently protruded the atropia will retract the iris. I am inclined to think that dilatation of the pupil diminishes intraocular pressure and relieves vascularity, and therefore use it largely in all ocular inflammations.

The bowels are to be freed; and I prescribe tonics, frequently syrup of bark, to which may be added, if the infant is very restless and irritable, tincture of hyoscyamus. It may be necessary also to attend to the mother's or nurse's state of health, and occasionally a warm bath will be useful to the infant.

Should the disease be endemic, stringent measures must be adopted to eradicate it.

The mother or attendent is, in every case that comes before me, warned of the contagious and dangerous nature of the malady; and I am in the habit of advising the mothers to place themselves under special treatment in their next pregnancy, with a view to the cure of the vaginitis.

A consideration of the results of this disease and their treatment would be scarcely suitable to this society; it would, moreover, require one or more separate papers. I may mention, however, that the opacities of the cornea, if uncomplicated with adherent iris, disappear almost entirely. I have been astonished at the rapidity and completeness with which they sometimes disappear. Not long ago a medical friend placed under my care an infant with the disease in both eyes. The right cornea was completely opaque, and the iris protruding: the left cornea nearly entirely opaque. The case was so bad I gave an opinion that the child would have but limited vision, and that on the left side only. Notwithstanding, however, I kept atropia solution constantly employed, etc., and the child now, after four months, has almost perfect vision in both eyes, the prolapsed iris having returned to its normal position.—*Dublin Quarterly Journal of Medical Science.*

PATHOLOGY.

CHRONIC LARYNGITIS—REMOVAL OF EXFOLIATED ARYTENOID CARTILAGE.

Dr M'Donnell said the history of the case which he had to bring under the notice of the Society was briefly this. The patient, from whom he obtained the little body which he had in a test tube, was a man about fifty years of age, who had been under his care for two or three years, suffering from senile phthisis. About this time last year he lost his voice, and presented symptoms of laryngeal disease. He came often to his (Dr M'Donnell's) house, and having examined him, he saw ulcerations at the back of the vocal cords. From the frequent examinations to which he was subjected, he became by degrees very tolerant of examination with the laryngoscope. On the 17th of March 1865, he came into his study, suffering from extreme difficulty of breathing; this was so great that if he had dropped down dead before he crossed the room he should not have been surprised. On examining him with the laryngoscope he found, in the orifice of the rima glottidis, a little body moving up and down. The patient said, that during the night he felt something in his throat, and that he thought it was a loose tooth that had dropped out; whenever he took a drink he felt something pricking him. Dr M'Donnell succeeded, with a curved laryngeal forceps, in catching the little body and bringing it out at the first attempt. At first he did not know what it was, for it was apparently like hardened mucus. He put it into a tumbler of water, and after washing it and picking at it, he got out the little body which he now exhibited, and which he perceived was an arytenoid cartilage. They could see the articulating process; and the body, being partially ossified, retained its shape so completely as to leave not the slightest doubt of what it was. It was apparently held by one of the little ligaments at the base, and was in fact dangling loose in the rima glottidis. He was not aware that there was any other recorded case in which this cartilage had been removed in this way. In laryngeal phthisis it was not uncommon for the cartilage to become affected and subject to a process of exfoliation. Professor Smith informed him that there was in the museum of the Richmond Hospital a preparation in which the cartilage was to be seen dangling loose. The patient was instantly relieved by the removal of this body, and he subsequently died, on the 29th July last, of the senile phthisis which had been going on for some time. Dr M'Donnell had frequent opportunities after the removal of the cartilage of examining the patient, and he saw the puckered and contracted place from which it had been removed. The loss of voice was very great; and although the patient could speak so as to be quite distinctly audible and readily understood, the power of modulating the voice was gone.—*Reports of Dublin Pathological Society.*

Part Fourth.

MEDICAL NEWS.

INTERNATIONAL MEDICAL CONGRESS AT PARIS.

An International Medical Congress is to be held in Paris on the 16th of August 1867, under the auspices of his Excellency the Minister of Public Instruction. The Congress will be exclusively scientific, and will last two weeks. The labours of the Congress will include communications upon questions proposed by the committee, and also upon subjects not in the programme. The committee has drawn up a programme, which runs as follows:—1. The Anatomy and Pathological Physiology of Tubercle—On Tuberculization in different Countries, and its influence on the General Mortality. 2. The general Accidents which cause Death after Surgical Operations. 3. Is it possible to propose to the various Governments efficacious measures for restraining the Propagation of Venereal Diseases? 4. On the influence of the Dietary of different Countries in the Production of given Diseases. 5. On the influence of Climate, Race, and different Conditions of Life on Menstruation in various Countries. 6. On the Acclimatization of European Races in Tropical Countries. 7. On the Entozoa and Entophytes which may be developed in Man.

Those who desire to bring forward communications on these or any other subjects, are requested to address their manuscript to the General Secretary at least three weeks (26th July) before the opening of the Congress.

With the view of limiting and defining the questions in the programme, the committee has appended to each article commentaries, which we cannot now quote, but to which we shall subsequently refer, indicating the points to which it desires that papers should be especially directed. Foreigners may become members of the Congress by addressing a communication to Dr Jaccoud, Secrétaire Général, Rue Drouot 4, à Paris.

The idea is a happy one; the organization proposed is very complete; and the programme announced is carefully and skilfully selected. There is not one of these subjects in which we are not deeply interested in this country; there is not one in which various members of our English medical profession are not in a position to convey, and reciprocally to receive, useful information. They are questions which peculiarly demand an international solution; and it is worthy of consideration whether a committee should not be formed in this country to co-operate with the French committee, and to secure careful reports on each of the subjects proposed, so far as they affect, and in the sense in which they are resolved or regarded in, this country.—*Lancet.*

DISINFECTION OF CHOLERA.

In the Report of the International Sanitary Conference upon the hygienic measures which should be adopted for preservation against Asiatic cholera, Dr Muhlig has prepared an appendix on Disinfection, which is so important that we shall give an extended notice of it:—

After some preliminary remarks upon the subject of disinfection in general, the object held in view, and the results obtained hitherto by disinfection in cholera, Dr Muhlig proceeds to discuss the various means of disinfection applicable to cholera. First of all he mentions *free exposure to the air*, the length of time that any object must be exposed depending on its physical qualities, and the readiness with which air can penetrate it, or the tenacity with which morbid germs adhere to it. He regards eight days or so sufficient for the purpose of purification under the worst circumstances, but whenever it is possible other means of disinfection should be conjoined—indeed, in many cases, the exposure of contaminated objects may be dangerous. *Exposure to heat* is regarded as one of the best modes of destroying morbific germs in general, but in the case of cholera the heat must be raised to the extent of destroying organic matter; this amounts, then, to *combustion*, if we intend the heating to be of undoubted efficacy. *Immersion in water* constantly renewed can only be used at the certain risk of contaminating the water itself. *Chemical procedures.*—Under this head Dr Muhlig discusses the relative value of chlorine and chloride of lime or soda, quicklime, the mineral acids, coal tar and carbolic acid, Condy, and the salts of iron and zinc. He thinks that the efficacy of chlorine has been exaggerated, that experience has shown that its value is very limited, and that there is not a single conclusive fact to prove that it has any power to prevent the propagation of any one contagious disease. Chloride of lime, so far as the disengagement of chlorine is concerned, is necessarily still weaker than the chlorine used alone, and Dr Muhlig thinks that whatever disinfectant power it possesses is attributable to the lime which forms its basis. He regards *quicklime* as a highly useful disinfectant, since, besides its chemical action upon organic matters, it fixes and solidifies them at the same time that it also thus prevents the disengagement of emanations; it absorbs water and watery vapours from the atmosphere, with all that is suspended in them, without liquefaction itself, and also evolves much heat in the process. Its great inconvenience is that it promotes the disengagement of ammonia, and generally merely retards, in place of completely preventing, the process of putrefaction. The only value the writer attaches to *charcoal* powder and *dry mould* is that which arises from their power of absorbing gases. *Peat* he regards, from its power of absorbing ammoniacal matters, as the best disinfectant of urine. The *mineral acids* Dr Muhlig looks upon as disinfectants only in the sense of their being antiseptics. Nitric acid vapours and nitrous fumes he regards as having only partially justified the confidence which has been reposed in them as anti-contagious agents, and he thinks that the same remark applies to sulphurous acid. *Carbolic acid,* with which he classes coal tar, appears not to have received so much consideration from Dr Muhlig as might have been expected from the estimation in which it is held in this country, or as it deserved, in our opinion, after the elaborate report upon it put forth by Mr Crookes. The objection he raises to *permanganate of potash* is its price; still he regards it as a useful agent in purifying water from organic matters. Among all the chemical disinfectants, M. Muhlig gives the palm, on the whole, to *sulphate of iron,* so far as destroying the infection of cholera is concerned, its cheapness being also very much in its favour. *Chloride of zinc* he regards as undoubtedly superior, the only obstacle to its general employment being its price. We are sorry to confess ourselves somewhat disappointed with this part of Dr Muhlig's report. We think that a sanitary international conference should have put forth something upon this most important subject that would carry more weight than the string of opinions enunciated by Dr Muhlig. It contrasts very unfavourably with the admirable report on disinfectants issued by Dr Angus Smith and Mr Crookes under the auspices of our own Cattle Plague Commission.

Dr Muhlig passes on to consider the practical application of the several means of disinfection before referred to in the management of cholera. I. *As to the disinfection of cholera dejections.* Regarding these as containing the germ of the disease, he insists upon the necessity of submitting them to the operation of chemical agents from the very moment of their discharge. The agent which he prefers is the chloride of zinc, or in default of this the sulphate of iron, or they may be covered immediately on their discharge with quicklime in sufficient quantity to solidify them, or else carbolic acid or coal tar may be used. He gives a warning (very necessary for us in London, who are governed (?) by a number of disconnected local boards) against the absurdity of using a variety of chemical agents at the same time, some of which can only serve to neutralize the operation of the rest. 2. As to the *disinfection of privies and drains,* he considers that much will depend upon the system of sewerage in use. He thinks that the system of movable troughs (*fosses mobiles*) alone permits of a thorough plan of disinfection being carried into effect. Into these he would introduce, while empty, chloride of zinc, sulphate of iron, or coal tar. Under other circumstances he would treat the privies with a dose of the same disinfectants from time to time, using powdered charcoal also as a supplementary measure, to prevent the disengagement of putrid evacuations. Where a system of channelling is in use (as in London) he would prefer—on account of the vast system of sewers and their free intercommunication—to throw into the privies charcoal and quicklime, but he admits that in this case coal tar may "perhaps be a useful agent." At any rate, we are using carbolic acid very generally in our city, and it has, we believe, the full confidence of the majority of the Metropolitan Medical Officers of Health. One admirable suggestion of Dr Muhlig is, that the disinfection of privies and drains should be adopted, not only when cholera has broken out, but as soon as its outbreak is even threatened. 3. *For the disinfection of drinking water* he prefers filtration through charcoal and the use of permanganate of potash. 4. As to the *disinfection of houses,*—Dr Muhlig recommends, first, free aeration, not only by opening all the windows, but by establishing currents of hot air by means of braziers; next, that the floors, etc., should be sprinkled and washed with a solution of chloride of lime or carbolic acid; after this, that sulphur should be burned, so that the fumes should reach all the corners and crannies. He recommends that this process should be extended over several days, and that finally the walls should be limewashed and the floors, etc., freely washed with water. Eight days he regards as the shortest period over which the process of disinfection should be made to extend. 5. As to the disinfection of *goods, clothing, and merchandise,*—Linen articles, etc., before handing over to the laundress, should be disinfected as quickly as possible with chloride of lime or soda, and after washing should be freely exposed to the air until absolutely dry, and in order to insure purification, the articles should be boiled. The experience of the Imperial Marine Hospital at Constantinople is in favour of this method. Dr Budd uses chloride of zinc in a similar manner. But it is clear that some articles in common use by cholera patients cannot, from their nature or thickness, be thus treated when contaminated,—such articles must be burned. Of this nature are beds, mattresses. At least, if not burned, they should be exposed to a high degree of heat, as recommended by the late Dr Henry, of Manchester, and subsequently freely exposed to the air. 6. *As to the disinfection of ships*,—This Dr Muhlig confesses to be a most difficult affair. It must, however, be based upon similar principles to those on which the disinfection of ships is based when they are contaminated with yellow fever. The measures to be adopted should be more or less rigorous, according to the intensity of the focus as manifested on board, the lapse of time since the departure from an infected port, and the degree of healthiness of the port. M. Muhlig in his report gives minute instructions upon this subject, which it is unnecessary that we should transcribe, but which we recommend to the study of all who are, or are likely to be, concerned with the prevention of disease at seaports.—*Medical Times and Gazette.*

ROYAL COLLEGE OF SURGEONS.

At the annual meeting of this College, held on 17th inst., the following office-bearers were elected for the ensuing year:—

President, James Dunsmure, M.D. *Treasurer*, John Gairdner, M.D. *Secretary*, James Simson, M.D. *Librarian*, Archibald Inglis, M.D. *President's Council*, James S. Combe, M.D.; Andrew Wood, M.D.; Robert Omond, M.D.; Benjamin Bell; James D. Gillespie, M.D.; James Spence. *Ex officio*, John Gairdner, M.D. *Examiners*, James Simson, M.D; Richard Huie, M.D.; William Dumbreck, M.D.; Archibald Inglis, M.D.; Andrew Wood, M.D.; Robert Omond, M.D.; James Dunsmure, M.D.; Peter D. Handyside, M.D.; James D. Gillespie, M.D.; Henry D. Littlejohn, M.D.; Patrick H. Watson, M.D.; David Wilson, M.D. *Assessors to Examiners*, James S. Combe M.D.; James Syme; William Brown; James Spence. *Conservator of Museum and Registrar of Students' Tickets*, William R. Sanders, M.D. *Officer*, John Dickie.

OBITUARY.

JOHN COWIE, M.D.

The Shetland Isles have recently sustained a very serious loss in the death of Dr Cowie, who, for nearly twenty years, since the time of his elder brother Isaac, has been the principal practitioner in that remote portion of Scotland. He was a most reliable man, skilful and enthusiastic in his profession, and, greatly to his credit, when we remember the many distractions to which he was inevitably exposed, he kept himself *au courant* of all modern discoveries and improvements. Standing almost alone, he undertook every department of the healing art, and in cases of sudden emergency exhibited an aptitude for operative surgery which added greatly to his efficiency. We have often felt that such men are inadequately valued while they live, and are only duly appreciated by the communities among whom they have laboured, when death summons them away. Their self-denying toil, which knows little or no cessation, is often very poorly requited, excepting in the satisfaction of having honestly done their duty, and it too often happens, we fear, that they die prematurely, worn out by the excessive pressure of bodily fatigue and mental anxiety. This appeared to be the case with Dr Cowie. He was only fifty-three; and had it been possible for him to leave the scene of his incessant toil for a season, it seems probable that his valuable life might have been prolonged. He has left behind him the partner of his life and five sons, the eldest of whom, Dr Robert Cowie, who graduated this autumn, has just entered upon practice in Lerwick, but too late, alas, to relieve his excellent father in the performance of his professional duties. The thought, however, that he had a son ready to succeed him must have helped to comfort his last moments, and we doubt not that the bright example of the father will stimulate the son to follow in his steps.

PUBLICATIONS RECEIVED.

Brown,—Surgical Diseases of Women. By I. Baker Brown, F.R.C.S. Third Edition. London, 1866.

Congrès Médical International de Paris: Statuts et Programme.

Chapman, — Diarrhœa and Cholera. By John Chapman, M.D., London, 1866.

Crisp,—On Malignant Cholera. By Edward Crisp, M.D., etc. London, 1866.

Guy's Hospital Reports. Third Series, Vol. XII. London, 1866.

Jarvis, — Influence of Distance from and Nearness to an Insane Hospital on its Use by the People. By Edward Jarvis, M.D.

Macleod, — Acholic Diseases; comprising Jaundice, Diarrhœa, Dysentry, and Cholera. By A. C. Macleod, L.K.Q.C.P.I., etc. London, 1866.

Murray,—Emotional Disorders of the Sympathetic System of Nerves. By William Murray, M.D., etc. London, 1866.

Mushet, — Practical Treatise on Apoplexy. By William Boyd Mushet, M.B., etc. London, 1866.

Norton,—Osteology for Students. By A. T. Norton. London, 1866.

Norton, — Atlas for preceding. By A. T. Norton. London, 1866.

Sansom, — The Arrest and Prevention of Cholera. By A. E. Sansom, M.B., etc. London, 1866.

Shrimpton,—Cholera: Its Seat, Nature, and Treatment. By Charles Shrimpton, M.D., etc. London, 1866.

Squire, — Chromo-Lithographs of the Diseases of the Skin. By A. Balmanno Squire, M.B. London, 1866.

Saint Bartholomew's Hospital Reports. Vol. II. London, 1866.

ERRATA.

In giving the list of office-bearers of the Sick Children's Hospital in the last number of this Journal, we inadvertently omitted the name of Professor Spence: Professor Spence is Consulting Surgeon to the Institution.—In the list of Physicians to the Aberdeen Infirmary, Dr *Keith* was misprinted for Dr *Reith*.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Notice of some of the Therapeutic Effects of the Bromide of Potassium.* By JAMES BEGBIE, M.D., Fellow of the Royal College of Physicians of Edinburgh, etc.

A QUESTION has recently been raised, and partially discussed, in the pages of periodical medical literature, in regard to the efficacy of the bromides of ammonium and potassium as remedial agents in disease.

The answer, I apprehend, has been disparaging and unjust to their value, and calculated to deter the profession from entering on a full inquiry into their real therapeutic properties. After an experience of some years of the use of these remedies, particularly that of the bromide of potassium, I have become satisfied of their great value in the treatment of many diseases, but more especially of disorders of the nervous system,—affections of centric origin, or of remote parts through reflex action.

The article "Brome," in the "Traité de Thérapeutique" of Trousseau and Pidoux, has made us acquainted with all that was known, up to the time of its publication in 1858, of the physiological and therapeutical effects of bromine and its compounds. The experiments made in France were not such as greatly to encourage practitioners in the use of bromine as a substitute for iodine; nevertheless, they brought out some remarkable results as respects the anæsthetic properties of the bromides. In chronic arthritis, for instance, it was found that they arrested completely and rapidly the pains in the affected joints. It is this calmative, sedative, anæsthetic virtue which gives the great value to the bromides, and the knowledge of it which has led to their application to disease in a wider circle.

It is not the purpose of this notice to refer to the alterative, absorbent, and deobstruent properties of these salts. These have all been recorded. I may, however, mention that I have witnessed enlargements of the spleen and liver subside under the use of the bromide of potassium; and that, in glandular swellings of a scrofulous kind, I have observed the same happy results attend the exhibition of the remedy which I have long known to follow the use of the muriate of lime,—the chloride of calcium, a remedy which has undeservedly fallen into disuse since the introduction of iodine into practice. I limit my remarks to the therapeutic effects of the bromide of potassium in some disorders of the nervous system. I believe that the bromide of ammonium possesses precisely the same action, but my opportunities of practice enable me to speak more confidently of the kindred substance. I have, however, employed the former in asthma depending upon nervous irritation, with marked advantage; and in cases of irritable sore-throat have preferred it as a topical application. A solution of one ounce of the salt to a pint of water forms an excellent gargle in these affections.

1. The bromide of potassium is a valuable calmative and hypnotic. When opium and other narcotics have failed to procure sleep, or when they have succeeded only at the expense of sickness, vomiting, headache, and other consequences, the bromide, free from all unpleasant or injurious effects, will often tranquillize and secure repose. In the sleeplessness which occurs during convalescence from fever, and at the termination of acute diseases, or after the performance of surgical operations, the bromide will be found a safe and efficacious remedy. A dose of from twenty to thirty grains dissolved in a wineglassful of water, or of orange-flower water, administered at bedtime, repeated in the morning, and persistently employed in this way for days, or weeks, will often effect what the most powerful narcotics in daily use have failed to accomplish. A medical man recently called on to undergo a painful operation, by which the whole front of the tibia was laid bare, in connexion with the use of the trephine, and the examination of the shaft of the bone, suffered greatly from restless, sleepless nights. He had had recourse to opiates in the usual form, but without any alleviation. I suggested to him the use of the bromide of potassium in doses of thirty grains, night and morning, which he immediately commenced, and followed with perfect success. He writes me now, —"I derived great benefit from the use of the bromide of potassium. Its effect in procuring sleep was very marked, while it produced none of the unpleasant after-symptoms following the use of opium. In all cases of irritability of the nervous system it will be found, I should think, to have a high therapeutic value."

2. In those distressing nervous affections, the offspring of overtaxed brain, which we are ever and anon called upon to combat in the case of the earnest student, the plodding man of business, or the speculating merchant, cases where, by rising early, and sitting up late, neglecting regular hours of diet, and abandoning exercise in the open air, the whole machinery of life and health have been deranged, and the unhappy victims contemplate nothing short of the wreck of mind and body: in these circumstances, next to rigid hygienic rules imposed by the physician, and carefully carried out by the patient, will be found the amelioration and ultimate removal of the evil, in the use of remedies which have a calmative effect upon the nervous system. Of these the bromides, in my experi-

ance, are the safest and the best. An intelligent and hard-working head of a great monetary establishment, who had been obliged from loss of health to resign his position, writes me as follows:—"I write to tell you of the wonderful benefit which even in the course of the first month I had derived from taking the bromide of potassium. I am sure you will be glad to know that I have not for years been so free of all those painful and disagreeable symptoms which used to affect me,—the constant nervous headache, want of sleep, and breathlessness, both during the day and night. Notwithstanding that in travelling I was unable to take the medicine as regularly as I should have done had I been at home, it has worked upon me like a charm." Associated with the cerebral disorder of giddiness and sleeplessness, we often find perversion of the external senses, such as rushing, ringing sounds in the ears, etc. These I have found to be quelled and silenced by the use of the bromide, which may be successfully administered in all cases of hyperæsthesia.

3. In those sad and humiliating instances of nervous disorder which follow the vicious practice in which unhappily the young, and sometimes the more mature of both sexes too often indulge, the painful retribution which sooner or later overtakes them is often the call for medical assistance. In opium and belladonna, in zinc and iron, there is often found a source of relief so far as medicine is capable of affording it. In the bromides we secure an additional and trustworthy agent, of whose efficacy I have repeatedly satisfied myself.

4. Closely allied to, and springing out of, the nervous disturbance produced by the practice referred to, are various shades of epileptiform disorder, and even epilepsy itself in no mitigated character. Of the powerful influence for good which the bromides have exercised over such affections there can be no doubt. Unquestionably, there are varieties of epilepsy which no remedy can be expected to reach, but there are many of eccentric origin, arising from irritation of remote parts, springing from the teeth, the uterus, the bladder, etc., which, in no limited number, yield to a calmative and tonic treatment. Deprived of strychnia and zinc, of belladonna and bromide of potassium, such cases would only swell the list of incurable epileptics which we are called to mourn over. The necessity for a prolonged use of the remedy must be enforced even after a lengthened interval between the paroxysms, and their mitigation, have resulted from its use. The system acquires a great tolerance of its employment, and I have never satisfied myself that any evil has resulted from its long continuance. In the case of a young gentleman it has been taken uninteruptedly for upwards of a year, and during that time only one slight attack of *petit mal* has been known to occur, whereas, previously to its use, frequently recurring attacks of a graver kind had been witnessed for years. A gentleman, aged twenty-seven, has for several years been subject to attacks of *petit mal*, occurring at irregular intervals, but latterly as

frequently as every ten days, accompanied by much nervousness and dread of impending loss of mind. The memory has certainly been impaired. The malady first showed itself when he was undergoing great mental as well as bodily exertion at college. Mr —— has been treated by different physicians, and with various remedies; in particular, he has had for lengthened periods the chief nervine tonics and sedatives, including iron, zinc, copper, belladonna, and valerian, without any marked benefit. Latterly, he has been taking the bromide of potassium in doses of twenty grains, twice a-day, under which a marked improvement has taken place. The general, and nearly constant feeling of nervousness has diminished, and for six weeks there has been no occurrence of an epileptiform character. He is now hopeful, nay, even confident, of his return to health and usefulness, of which he had long despaired.

5. Opium, antimony, aconite, digitalis, and others have all been employed in large and frequently repeated doses, as powerful depressants in the paroxysms of acute mania and delirium tremens. The practice is not without its risks. In securing the calmative and sedative effects of the bromides will be found a safer and, I venture to hope, a not less successful mode of practice. I have seen, in two recent cases of violent maniacal excitement, a dose of thirty grains of the bromide of potassium, administered every second hour, reduce to quietness the restless subjects, and lay them down in sleep, of which they had for days been deprived. I have not much experience of the remedy in delirium tremens, but I know that it is now on its trial, and I entertain little doubt that it will be successful. In one case its use has been followed by satisfactory results, quickly calming the agitation and excitement, and inducing sleep. In nymphomania, the bromides have been employed with marked success, and Dr James Struthers informs me that he has obtained most satisfactory results from their administration in puerperal mania. This experience is confirmed by that of other physicians engaged in obstetric practice. In melancholia, attended with fixed delusions and great restlessness, I have found the bromide a powerful calmative. A young woman about thirty years of age, who had been afflicted on a former occasion with deep depression and painful delusions, was lately suffering from a renewal of her malady, in which persistent sleeplessness and dread of impending destruction of all near to her were the prominent features, was quieted, composed, and put to sleep under the use of repeated doses of the bromide, and in the course of a few days regained her reason and self-control.

6. There are several affections of the larynx and bronchi which we have reason to believe have a cerebral origin, or, at least, an intimate connexion with the nervous centres, and through which their treatment may be conducted. Of these, hooping-cough, laryngismus stridulus, spasmdic croup, and spasmodic asthma are examples. The anæsthetic properties of the bromide of

ammonium, as manifested on the mucous membrane of the mouth and throat, had led it to be employed in the treatment of the first-named affection, and with a large share of success,—a success depending, however, I apprehend, on its more general effects on the nervous system, just as we see the beneficial effects of hydrocyanic acid and henbane in the early stages, and indeed throughout the continuance of the paroxysms, of the disease. No treatment of hooping-cough is apparently successful which is not directed to, and capable of soothing, the nervous element which forms so conspicuous a part in its phenomena. For this purpose I have found the bromide of potassium to possess powers not inferior to any of the narcotic remedies in daily use.

I can only form a conjecture in regard to the therapeutic value of the bromides in laryngismus stridulus and spasmodic croup. I have had no opportunity as yet of testing their operation in these affections, though I have a confident hope that they will be found useful in these and other spasmodic disorders of the excito-motory system of nerves. In spasmodic asthma, which bears a close analogy to them in its manifestations, and an intimate relation to them as a disease of nervous origin, I have obtained the most gratifying results from the employment of the bromides. In two cases of long standing, which had resisted all approved methods of treatment, and where the patients had renounced all hope of benefit from drugs, the use of the bromide of potassium in full doses, night and morning, was followed by a remarkable remission of the fit,—the patient in one case having slept for several consecutive nights without the return of the asthmatic paroxysm, a circumstance which had not occurred for years. In the second case the result was equally satisfactory.

An esteemed professional friend has handed me the following notes of the case of his wife, who, after prolonged months of suffering from spasmodic asthma, attained in a short time, indeed within a week, complete relief from the severity of the paroxysms under the use of the bromide of potassium :—"Having mixed in society, taking slight notice of what appeared to be an ordinary cold, she was seized with an acute bronchitic attack, and took to bed on the 13th of December 1864. Towards Christmas the attack assumed an asthmatic form, and the patient was confined to bed for a month. For three months the asthmatic attacks were severe, and were relieved only temporarily by such remedies as ethers, opiates, the inhalation of carbonic-acid gas, and, in the more formidable paroxysms, by chloroform, which was used in large quantities.

"No permanent relief having followed the treatment, the patient was recommended to remove to the west coast in the month of March 1865; but the weather being cold, she derived no benefit, and was advised to return home and try the effect of a course of blistering. This advice was acted upon; but making no progress, she was recommended to try a few weeks at the Bridge of Allan, where she went towards the middle of April, and remained till the 18th of May, when the attacks having become more alarming, and her sufferings greatly increased, she returned home.

"Early in July she removed to Moffat, but after a week's intense suffering there, chloroform being required every night, she returned again to Edinburgh. On the 21st July she went to Rothesay, where she first found some relief. The weather had become more genial; she resorted to the various baths, applied sinapisms to the pit of the stomach, substituted hot gin and water for chloroform during the severity of the attacks, which, though still violent, did not last so long. Her health improved much, and the attacks became modified, and she returned to town at the end of August for a fortnight. She then went back to Rothesay for five weeks, during which time she was much stronger than she had been for long, taking walks of two or three miles.

"Soon after her return to town, on the 18th of October, the attacks becoming very severe, and resisting all the means employed for her relief, she went back to Rothesay on the 3d of January, but the attacks then became more severe, two of them lasting for hours, and yielding only to the inhalation of chloroform. After her return home, on the 7th February, she continued to have nightly attacks of great severity, and on two occasions, 26th February and 17th March, the imminent danger in which she appeared led to the abstraction of blood from the arm to 20 oz., which on both occasions was followed by complete though not permanent relief. On the 25th April the patient returned to Rothesay, and continued a course of croton oil she had some time before commenced, but the paroxysms were as severe and lasting as ever, few nights being passed without medical aid being required, which was fortunately speedily and efficiently rendered.

"Very early in the disease, viz., in the end of January 1865, the bromide of potassium was employed for a fortnight, first in five-grain, then in scruple doses without success; but it was not until the 3d of July last that the persistent use of large doses of the bromide was resorted to, and they are still steadily kept up. Their use speedily secured sound and continued sleep, to which the patient had long been a stranger, seldom sleeping two hours at a time, and, to use her own words, 'The attacks since have never been so violent; sometimes the cough is severe enough, but the asthma is really nothing to speak of in comparison with former suffering.'"

7. Presuming that in these affections of the respiratory organs the morbid action is transmitted through the pneumogastric nerve, and that the therapeutic effect is conveyed through the same channel, it is not unreasonable to conclude that other organs still more distant from the brain might, in a morbid condition, be found amenable to the action of the same therapeutic remedy; that the stomach and other viscera supplied by the pneumogastric might in

a state of irritation be quieted by means found to be effectual in calming the disorder of the respiratory function. Accordingly, I found that the bromide has proved useful in certain cases of vomiting, and in other affections in which the ganglionic nervous system is disturbed.

8. When Professor Claude Bernard demonstrated that the increased formation of sugar by the liver, and its presence in the blood is the result of some exciting cause which acts by reflex action, conveying the stimulus to the medulla oblongata, whence it is propagated by the spinal cord and great sympathetic nerve to the liver; and when he also showed that in cutting the pneumogastric nerve the secretion of sugar was stopped, but that it still took place when the floor of the fourth ventricle was irritated after the division of the nerve; and when these experiments were followed by results obtained by Dr Harley and others, showing that local irritation of the liver itself can produce saccharine urine; when we consider also that a saccharine condition of the urine frequently follows injuries of the brain, and that disease of that organ is sometimes the immediate cause of death in those labouring under diabetes, we found a new view of the pathology of that disease opened up to us. When we bear in mind, also, the alterative and absorbent effects of the bromides on the liver, and their remarkable power in soothing and calming irritability of the nervous system, we might be encouraged to employ such an agent in the treatment of diabetes. The physiological fact, the pathological condition, and the therapeutic principle, make it fairly applicable, and lead us to expect satisfactory results.

Towards the close of January last, a gentleman, aged 60, residing in the north of England, consulted me regarding the well-marked symptoms of diabetes under which he had long laboured. He had been for three months under the care of Mr Welford of Sunderland, and by his advice came to Edinburgh. He had been treated by the remedies considered of most avail, and by the diet considered essential in the management of his malady; but he had lost ground. He had long been dyspeptic. He was now thin, pallid, and emaciated. His skin was cold and dry; his pulse rapid and feeble; his tongue red and tender; his gums spongy and apt to bleed; his thirst was excessive; his appetite voracious; his bowels were constipated, and he suffered from bleeding piles; his urine was pale, and voided frequently and in large quantity. It was of high density, and loaded with sugar. The region of the liver was tumid and somewhat tender. The diet of animal food he had hitherto been permitted was continued in restricted quantity, and the free use of succulent vegetables was allowed, together with a liberal use of claret. All medicine hitherto in use was suspended, and the bromide of potassium, in doses of 20 grains, was prescribed, and ordered to be taken three times a-day. The treatment was steadily pursued. From week to week a marked improvement was perceptible.

The skin gradually became moist and warmer, the tongue and gums less raw and tender. The appetite and thirst abated; the calls to pass urine were less frequent and urgent, and the quantity voided sensibly decreased; the density of the secretion fell, and the sugar by degrees became less and less, till, on the third week of March, six weeks after commencing the treatment by the bromide, not a trace of it remained, and Mr H. returned home apparently and confessedly quite well. Desirous, however, of ascertaining whether he continued so, I wrote to Mr Welford at the close of May, and received from him the following:—"From the time of Mr H.'s return home up to the 24th of March he continued quite well. Whether he caught cold, or committed some indiscretion in diet, I don't know; but I was called to see him on that day, and found him suffering from pain and tenderness over the liver, thirst, dry tongue, increased secretion of urine, sp. gr. 1·032, with a slight trace of sugar. I prescribed medicine to act gently on the liver and bowels, still continuing the bromide; and, am happy to say, left him quite well on the 14th of May, not the slightest trace of sugar remaining, or any other bad symptom. I believe he still continues the bromide every morning; I requested him to do so as you wished. Should anything occur I shall let you know." Mr W. adds, "I have had under my care a lady suffering from diabetes, and, am happy to say, after a short time she has improved most wonderfully by taking the bromide and nothing else."

Shortly after this experience, I was consulted, in conjunction with Sir James Simpson and Dr Ross of Dingwall, in the case of a lady from the north of Scotland, who had for three years been labouring under diabetes. The disorder was well marked in all its prominent features, and the health had seriously declined. I mentioned, in consultation, the result of the two cases just recorded, and we agreed to recommend the bromide, and prescribed it accordingly. After some weeks had passed I heard from this lady that her health had much improved, and that her more distressing symptoms were greatly moderated. The medicine, however, had, she thought, made her nervous and emotional, and it had been discontinued. The urine is still saccharine. Sir James Simpson, in afterwards referring to this case, mentioned to me another in which the remedy had entirely succeeded. The history, I hope, he will give to the profession.

A young gentleman under the care of the late Mr Alexander, and subsequently under that of Dr Smart, by whom I had been consulted, had long laboured under diabetes, and had, under different remedies, appeared for a time to improve, derived no benefit from the use of bromide after a short trial, and resorted to the south of France, where, under a genial sky and the use of the dietary prescribed by Dr Pavy, he greatly improved. On his return, however, his urine was found still loaded with sugar, which a subsequent use of the bromide for a short time has not not been effectual in reducing.

A young gentleman, aged 13, under the care of Dr Burn, labouring under diabetes, of nine months' duration, in the course of which many remedies and careful dietetic rules had been followed without affording relief, commenced the use of the bromide of potassium in the beginning of September last. At that time he was pale and emaciated, with cold dry skin, and rapid and feeble pulse. His appetite was morbid and capricious; he was particularly addicted to the consumption of confections in no limited degree; his thirst was excessive. He passed, night and day, an inordinate quantity of urine, of high specific gravity, containing a large amount of sugar. He complained much of occipital headache, and any attempt to laugh was followed by a peculiar crowing inspiration twice repeated. Dr Burn has informed me from time to time of his progress, which has been steadily towards improvement. In addition to the bromide, I should mention that cod-liver oil has been in use. Under these means, carefully pursued for seven weeks, and without attention to diet, the restrictions of which could not be carried out, the urine has fallen to a normal quantity; and no trace of sugar remains. The skin is soft and moist, and of natural temperature. The appetite for ordinary food is returning, and the thirst has entirely abated. The pain at the occiput still, however, continues, and the peculiar crowing inspiration, when the risible faculties are moved, marks a feature in the case, and indicates its nervous origin.

These cases sufficiently show that there are forms of diabetes in which the functional derangement of the liver, and the production of sugar, are arrested by an agent whose operation is that of a sedative to the nervous system. It would be premature at the present moment to speculate on the amount of success that may attend the exhibition of the remedy in the varying circumstances in which the disease presents itself. This paper is a mere notice. A larger experience is required.

9. That a remedy, possessing apparently so little power as the bromide of potassium, should have been suggested in the treatment of cholera, a disease so grave in its character, so rapid in its course, and so fatal in its results, may appear to many inexplicable; nevertheless, the phenomena of cholera, in its earlier stages, point to its intimate connexion with disorder of the ganglionic system of nerves, with irritation of the nerve-centres and vaso-motor nerves, and with spasm of the capillary vessels, and obstructed circulation. To arrest this condition as early as possible seemed a clear indication of treatment; and the bromide of potassium, as possessing decided power in allaying irritation of the nervous system, and of relaxing spasm of the muscular fibre, was proposed by me as a possible means of allaying at least some of the more urgent symptoms of the disease. It was introduced into practice upon no empirical ground, and with no expectation that it was to be found a cure for the disease. The very first trials of it in the Leith Cholera Hospital were such as to justify the confident hope that it would be

found useful; and its subsequent employment there, as well as in the Edinburgh Cholera Hospital, has not disappointed expectation. In the two institutions named, the former under the superintendence of Mr Niven, the latter under that of Dr Stevenson Smith, and also in private practice, I have had many opportunities of witnessing its effects, and am now prepared to say that the bromide of potassium, though not possessing the properties of an antidote to the poison of cholera, though not a specific to the shock of this terrible disease, has certainly stript it of some of its terrors.

No one, I believe, who has with unprejudiced mind given himself the opportunity of watching the effect of the remedy in the earlier stage of collapse, can have failed to observe the remarkable remission of vomiting and the arrest of cramp which follow the exhibition of five or six doses of twenty or thirty grains, at the interval of an hour or half-an-hour, and the speedy return of warmth and colour to the previously cold and livid surface. To these indications of reaction there follows the cessation of the rice-water dejections, and the secretion and voiding of urine. Here, it may be said, its efficacy terminates; and certainly there is no need of pushing its use further. It has done good service. It has removed the only pain the patient suffers—the agony of cramp. It has arrested the vomiting and diarrhœa. It has arrested the tendency to death; and now there opens to the observing physician a second stage in the aspects of this mysterious disorder, and an opportunity of suggesting remedies more suited to the new phenomena which succeed. Even so we relinquish our means of cure fitted for the cold stage of fever, and betake ourselves to remedies more befitting the hot and sweating periods which follow after. The use of the bromide is contra-indicated so soon as reaction has set in. Its known physiological action precludes its use when drowsiness and stupor and other symptoms of oppressed brain begin to manifest themselves. I have not satisfied myself, however, that the use of the drug in the earlier stage tends to a fuller development of these in the latter, as some are inclined to believe.

10. Who doubts the efficacy of the antimonial opiate associated with the name of Dr Graves, in the treatment of the nervous element in fever? Opium and antimony, however, cannot always be administered with advantage in such cases, and camphor and henbane and other sedatives often fail in securing relief. In the bromide of potassium we have an excellent substitute, one which can be administered with wine or other stimulant, and whose power to calm in such circumstances I have lately tested with satisfaction. Who distrusts the anti-periodic power of quina in ague, or what can we look to but arsenic if cinchona fails? A sufferer from quotidian ague, after large and repeated doses of quina during the interval, had his regular accession of cold, and hot, and sweating stages unaffected by the specific. The sweating stage was unusually protracted and exhausting, and at the end of a fortnight no mitigation was effected.

He was advised to take a full dose of the bromide of potassium every three hours during the remission, and, with one imperfect paroxysm, he got quit of his malady.

11. When the long list of anti-neuralgic remedies, so called, has been exhausted, and when the hope of the physician has died away with the fading prospects of the patient; when no palpable or suspected organic mischief gives rise to the want of success in the use of well-tried and approved remedies, and when no constitutional diathesis stands in the way of well-directed skill to overcome; in those anomalous forms of neuralgia let me ask a trial of the bromide of potassium. It will, now and then, in its own gentle way, reprove the employment of the more heroic treatment which had anticipated its use, and demonstrate that a calmative, in such cases, frequently succeeds better than a counter-irritant.

12. Lastly, while doubting, somewhat, the correctness of my own views in regard to the anæmic origin of that complex affection of palpitating heart, protruding eyeballs, and pulsating bronchocele, which has been called "Graves' disease," though Parry described it equally well half-a-century before him, and which some continue to call "exophthalmic goitre," though the eye in some cases is never affected, and when affected, is not always conjoined with the thyroidal tumour,—an affection whose seat and nature neither the genius of Parry nor the acute observation of Graves had been able to unveil;—while doubting the humoral origin of this curious disorder, and not unwilling to give proof of the correctness of the neurotic theory, I was recently consulted by a young gentleman of eighteen years of age, of good constitution, of healthy complexion, accustomed to daily service in a mercantile establishment, but enjoying abundance of exercise in walking to and from his place of business to his residence in the country, free, I believe, from vicious pursuits, and never suffering from loss of blood; I was consulted by him for a violent pulsation of the heart and breathlessness on making exertion. The eyeballs were normal; but the thyroid gland was the seat of a great vascular hypertrophy, from which, as well as from over the region of the heart, were emitted those acoustic signs which we associate with anæmia. Anxious to relieve the patient, and willing also to test the nervous character of his disorder, I prescribed for him the remedy which in so many instances had been found available in subduing hyperæsthesia and other nervous affections. He took for weeks the bromide of potassium in full doses, and I know with rigid punctuality. He was sensible of a calmness diffused by the remedy; but his heart still maintained its rapid course, and his neck still displayed the prominent horse-shoe shaped tumour which is called goitre. I prescribed aconite, but the throbbing heart presented no signs of quiescence, and the tumid gland no appearance of diminished size. In my partial disappointment I returned to iron, aided by henbane, which hitherto had hardly ever failed of success in this affection; but, after a time, the

effects were not such as to encourage its continued use; and the patient, expressing a strong desire to return to that of the bromide, under which the palpitation, as well as the nervous symptoms generally, were more sensibly calmed and overcome, he resumed the remedy. I was the more disposed to sanction this, in consequence of having observed, in the meantime, the remarkable remission which took place in some of the more prominent features of this complicated disorder in the case of a lady, where the functional disturbance had long since passed into organic change—into dilatation of the chambers of the heart, enlargement of the liver, and dropsy as the consequence. This lady had the protruding eyeballs, and the rapid pulsation of the heart, with the anæmic bruit, and other signs of bloodlessness; but, unlike the young gentleman referred to, she had never had the tumid thyroid, thus equally forbidding the application of the name given to her disorder. She was very nervous, restless, and sleepless, and she suffered from constant irritability of stomach and bowels. To calm the former she was ordered to take the bromide of potassium, and in obtaining relief from her nervous agitation, and securing sleep, through its means, she procured also a respite from vomiting, while the pulsation of the heart was diminished in force and frequency, and the eyeballs presented less of the startled, staring prominence they were wont to assume. It was only a short-lived relief. The dropsical effusion gained ground, the powers of life gave way, and, breathless and exhausted, she terminated long years of suffering.

As I write, the young gentleman referred to enters my study. He is less nervous and agitated. His pulse at the wrist is slower, and the impulse of the heart less violent. The vessels of the neck seem more at rest, but the size of the thyroid gland is not diminished. I look to belladonna and the muriate of iron, but resolve to give a further trial to the bromide of potassium.[1]

Such are some of the effects of a remedy which is destined, I believe, to hold its place among our valued therapeutic agents; in its mode of operation to throw light on some obscure affections; to afford comfort and relief to many suffering from painful disorders; and to falsify the prediction, too readily announced, that "bromine and its compounds are already sharing the fate of many of their predecessors, and falling gradually into the sere and yellow leaf of fashion, as a prelude to their being entirely consigned to oblivion."[2]

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[1] At this last interview I learn, what had previously escaped the patient's memory, that about eighteen months ago, while undergoing much fatigue, and but imperfectly nourished, he was, for a period of three weeks, daily subjected to loss of blood from the nose, and that it was from this time that he dates the commencement of the palpitation and nervousness he has been suffering.

[2] Dr Drysdale. *British Medical Journal*, July 14, 1866.

ARTICLE II.—*Cases of Ovariotomy.* By THOMAS KEITH, F.R.C.S.E.

IN the following paper an account is given of the operations for ovarian tumour performed since the last series of cases reported in the December number of this Journal for 1865. The number of these is now forty-eight, with the result of thirty-seven recoveries and eleven deaths, or a mortality of twenty-three per cent. There has been no selection of favourable cases, and experience in the operation has diminished the mortality attending it, for

Of the first	16 cases,	6 died.
Of the second	16 "	3 "
Of the third	16 "	2 "
	48	11

There is also given a report in full of a case which proved to be one of chronic—apparently tubercular—peritonitis, in which, though the physical signs were entirely those of ascites, the history was so clearly that of an ovarian tumour that, misled by the circumstantial and unvarying statement of the patient, I made an exploratory incision, the only instance in which I have had occasion to do so.

CASE XXXVI.—*Multilocular Tumour: once discharged by vagina: once tapped. Ovariotomy. Pulmonary Congestion. Recovery.*

R. S., aged twenty-three, had enjoyed good health till January 1864, when she felt pain in the left side. In March she applied to Dr Matthews Duncan, who detected an ovarian tumour, which by May filled the abdomen. One evening in July, while out walking, a thick glutinous fluid began to escape from the vagina. This continued to flow during the night and following day, leaving the abdomen quite flat. In a few weeks she had regained her former health, and for some months was able for service. In May 1865, having again increased in size, she was admitted into the Royal Infirmary under Dr Duncan, and in June nearly two gallons of thick green fluid were removed by tapping, leaving a semi-solid tumour as high as the umbilicus. The cyst was refilling when she left the hospital in the end of July. Soon after this she came under my care, Dr Duncan having asked me to undertake the surgical management of the case, which we looked upon as rather a hazardous one, from the extent of adhesion which was suspected, and from the bad general condition of the patient.

She had a peculiar unhealthy anæmic leaden colour, and was considerably emaciated. The tongue was large, red, and irritable, and she had lost nearly all her teeth. She measured forty and a-half inches at the umbilicus, and nineteen inches from the ensiform cartilage to the pubes. The tumour was very prominent at the epigastrium; above the umbilicus there was a broad contraction in it, running across the abdomen; here adhesion was evident. Below the umbilicus there was coarse crepitus over a large extent. The left side of the vagina was depressed, and felt hard. The uterus was movable, and its fundus lay to the left, pushed downwards by the tumour.

Ovariotomy was performed on the 21st of November. Dr Matthews Duncan, Dr Gamgee, and other friends, were present. The incision extended from two inches above the umbilicus, to seven inches below it. The adhesions were extensive and firm; the omentum came in between the tumour and wall, and was partly adherent to both. As it was a good deal torn, and bled freely, I cut away a piece the size of the hand. The tumour was very vascular, and there was more blood lost than usual. The pedicle was about an inch and a-half in length; it arose from the right side of the uterus, and was secured by a clamp. Several vessels in the omentum and wall were ligatured, the ends being cut short. The pelvis was sponged from all blood, and the wound closed by eight deep silk sutures. There was nowhere any pelvic adhesion, and no evidence in what way the fluid had escaped the year before. The left ovary felt normal in size, but it was adherent, and could not be brought into view. The cyst walls and contents weighed thirty-three pounds.

The operation lasted an hour. She looked very pale on being put to bed; the pulse was 120. By evening she was in a profuse perspiration; she had no pain, but cough was troublesome, and the pulse had risen to 130. She passed a very restless night from cough and vomiting. Next morning the pulse was 140; the respirations 36. The skin was hot at some places, perspiring at others; the mouth was parched, and there was a troublesome suffocative cough, with some tracheal râle. The heart was oppressed, and its action tumultuous. No respiratory murmur could be heard, only an occasional sibilant râle. This state of matters continued all day, and sometimes she looked extremely ill. I thought of taking a little blood from the arm, but was deterred by the extreme feebleness of the pulse. A little brandy and soup were thrown up the bowel occasionally. Nothing was retained on the stomach, and as she always seemed relieved after vomiting, this was encouraged by drinks of tepid water. Every now and then the ribs were forcibly compressed by the hands, and she was made to cough up the phlegm which collected in the trachea. Towards evening she became more comfortable, and by midnight the heart and lungs were acting well, as also were the kidneys and skin.

After the second day she went on well. There was profuse expectoration, and severe cough for some days. The silk sutures were removed five days after the operation, and neither then nor subsequently did a single drop of matter come from the wound. I never saw more perfect primary union, and the circumstances were most unfavourable for it. She went home twenty-five days after operation, having been walking about the house for the previous week. When seen lately, she had the ruddy look of perfect health.

CASE XXXVII.—*Semi-solid Ovarian Tumour. Ovariotomy. Recovery.*

Miss D., aged twenty-three, came to me in August 1865, at the recommendation of Dr Campbell of Dunse. She was chloro-anæmic, and had a large goitre; and though she had often bad nights on account of pain, her general health had not been much affected. The tumour was of six months' growth, extending to midway between the umbilicus and ensiform cartilage. It was semi-solid, and unattached. Her girth was thirty-three and a-half inches. The uterus was drawn upwards to the left side, and its connexion with the tumour seemed pretty close. The diagnosis given was "unattached multilocular tumour of left ovary; pedicle probably short." No interference was recommended, for her general health was still good, and it was probable that as the tumour enlarged and grew upwards, the pedicle would become elongated.

After four months she returned for operation. The tumour now reached to the ensiform cartilage, the girth was thirty-six inches, and the distance from the ensiform cartilage to the pubes was eighteen inches. Her general health had become affected; she had slight cough, and the heart's action was feeble.

Ovariotomy was performed on the 5th of December. I cut into the tumour, and broke it up, and succeeded in removing a mass of cysts and semi-solid matter, weighing upwards of twenty pounds, through an incision just sufficient to admit the hand. The pedicle was short and thick. It was secured by a clamp, which was adjusted near the centre of the incision, but not without dragging considerably upon the uterus. The wound was closed by two deep sutures above the clamp, and one below it.

During the operation the chloroform sickness was excessive, and it continued at intervals, with unusual severity, and great straining, for the first thirty-six hours. Otherwise, she made a fair recovery, and returned home twenty-five days after operation.

CASE XXXVIII.—*Multilocular Ovarian Tumour. Both Ovaries removed. Recovery.*

Miss R., aged thirty-two, came to me from Glasgow, in November 1865. First signs of ill health came on a year before, when she found that her dresses would not fit her as formerly. During the preceding June she had constant abdominal pain, otherwise she had not suffered much. The emaciation was considerable; she measured thirty-eight inches at the umbilicus; there was pretty general crepitus over the tumour; the uterus was high and movable. She had some cough; there was prolonged expiration, with fremitus over the right lung behind, but nowhere any dulness. Several years before there was a history of some acute chest attack, said to be bronchitis, but which was more probably pleurisy.

As her family history was not a good one, her father having died of rapid phthisis, I recommended the removal of the tumour as long as her health was fairly good. She went home to advise with her friends, and returned to me for operation. Ovariotomy was performed on the 19th of December, Dr Matthews Duncan, Dr Williamson of Burntisland, Dr Gamgee, and other friends, were present. The incision commenced an inch below the umbilicus, and extended downwards six inches. There was no difficulty, and the pedicle was secured by a clamp between two and three inches from the left side of the uterus. The right ovary was as large as a pigeon's egg; it contained three cysts. These were first punctured; but the organ seemed so thoroughly diseased that it would have been unwise to have left it behind, though its removal complicated and prolonged the operation, as from the shortness of its pedicle, it was not easy to bring it into view. Its pedicle was transfixed with a double silk ligature, and then with the ligatures cut away. One of the ligatures did not hold, and free bleeding went on. Two large vessels were secured, but there was so much oozing that I had again to transfix and tie close to the uterus. After sponging the pelvis and tying three bleeding vessels in the wall, the wound was closed by deep and superficial silk sutures. The weight of the cyst walls and contents was nineteen pounds.

There were no unfavourable symptoms. Uterine hæmorrhage came on two days after operation, and lasted two days. Towards the end of the second week there was fulness of Douglas' space, but it disappeared. She had little appetite, and lost flesh during her convalescence, but she returned to Glasgow in four weeks after the removal of the tumour. Soon after, she had a pelvic abscess, which discharged by the rectum. This retarded her recovery, and when I saw her three weeks ago, there was still some pelvic cellular induration, and she was unable to walk far.

CASE XXXIX.—*Very adherent Cyst. Once Tapped. Ovariotomy. Recovery.*

R. M., aged nineteen, a fair-complexioned, healthy-looking girl, but much emaciated, was sent to me, in January 1866, by Dr Matthews Duncan, on account of a large ovarian tumour of very rapid growth. In May 1865, she first observed some swelling, which increased so quickly that tapping was necessary towards the end of September. Within a fortnight after the tapping it was observed that the cyst had commenced to fill. She measured forty-five inches at the umbilicus, and twenty-two inches between the ensiform cartilage and pubes. The ribs were pushed outwards, and the dulness of the tumour extended nearly three inches under the sternum. The cyst was so tense that no diagnosis could be formed as to the presence or absence of adhesion, but the uterus was movable and the pelvis free.

The tumour was removed on the 13th of January. Dr Matthews Duncan and part of his clinical class were present. The incision extended from one inch below the umbilicus downwards eight inches. The cyst was the thinnest I have had to do with, and was most firmly and extensively adherent. The adhesion was most intimate in the right lumbar and iliac regions. It was sometimes not easy to distinguish between the cyst wall and peritoneum, and this was so torn in many places that I cut away several ragged pieces of it. After much injury had been inflicted on the peritoneum the tumour was withdrawn. It was nearly unilocular. The pedicle was long and thick, and was secured by a clamp. The right ovary was much congested, being twice the natural size; but there were no cysts in it. The wound was closed by silk sutures, and the double ends of eleven ligatures were left hanging out at different parts of the wound, for the bleeding from the torn adhesions had been free. The cyst walls and fluid collected weighed forty pounds, but several pints were lost.

The operation was tedious, and lasted an hour and a quarter. She was pale and cold on being put to bed. Healthy reaction soon came on. By evening the pulse was 140, but perspiration was free, and there was plenty of urine. Vomiting was very severe for the first two days. There was much distention, and for the first week she suffered much from the severity of the windy pains, and there was a tendency to diarrhœa. During the second week this tendency to mucous diarrhœa continued, requiring free opiates. The tongue was dry and red, and the pulse ranged from 100 to 115. The wound had remained quite dry. In the third week there was still some diarrhœa; on the seventeenth day the wound opened at the upper angle, and discharged about three ounces of healthy pus. The fourth week was one of steady improvement, and she went home to near Stirling forty-two days after operation. She has since enjoyed excellent health.

CASE XL.—*Multilocular Ovarian Tumour. Adhesions to Uterus and Bladder. Ovariotomy. Recovery.*

E. M., aged thirty-two, was sent to me, in January 1866, by Dr Stewart of Kirkintilloch. I had seen this patient some months before, along with Dr Stewart and Dr Wilson of Glasgow, and we looked upon the case as a favourable one for ovariotomy. The tumour had been detected twelve years ago, and had given little annoyance till within the last few years, when she became very uncomfortable and breathless for ten days before the period came on. This uneasiness continued till the period had passed off, when she had an interval of comparative comfort for a fortnight. Her mother had died of phthisis; but her general appearance was healthy, and the emaciation was moderate. The abdomen was soft, and measured forty-five inches at the umbilicus, and twenty-four inches between the ensiform cartilage and pubes. The uterus lay very low and far back in the pelvis. It felt heavy, but was movable.

Ovariotomy was performed on the 30th of January. Dr Matthews Duncan and other friends were present. The pulse fell to 20 during the inhalation of chloroform. After separating some parietal adhesion, it was seen that the bladder was drawn up upon the cyst, closely adherent to it. After freeing this, it was found that this adhesion was continued on to the anterior surface and right side of the uterus. The left ovary was also adherent to the tumour, and the pedicle was generally adherent in the pelvis. These adhesions were firm, and several vessels required ligature, the ends being brought out alongside the clamp. The pelvis was sponged, and the wound closed as usual by silk sutures. The large cyst, which was very thin walled, contained forty-one pounds of fluid, and the mass of secondary cysts that occupied the pelvis weighed two pounds.

There was some vomiting and distention for the first three days; otherwise, she made a rapid recovery, and was able to walk about a little on the sixteenth day after operation.

CASE XLI.—*Multilocular Ovarian Tumour. Ovariotomy. Recovery.*

In February 1866, Dr Graham Weir took me to see a married lady, aged fifty-five, who had suffered from ovarian disease for upwards of three years. When she came under Dr Weir's care, a year before, she had just returned from the West Indies, after a long residence there. She was then in a very feeble state of health, very much emaciated, and suffering so much from the pressure of the tumour that Dr Weir was obliged almost at once to relieve her by tapping. She recovered well, went to her native place in the north of Scotland, and after a year's good health returned to town, Dr Weir having advised ovariotomy as soon as she had nearly regained her former size. The journey from Golspie was well borne, and some abdominal pain and tenderness, with crepitus over the tumour, disappeared after a few days' rest in bed.

The general condition was not a very good one for ovariotomy. She was pale, and since the tapping had taken on much fat. The pulse was 90, and small, the heart's action feeble, the tongue large and soft. She measured forty-four inches, but from the amount of fat and teneseness of the cyst it was impossible to tell whether adhesion existed or not. At the tapping, however, the tumour seemed to be unattached. The uterus was drawn upwards. It was heavy and barely movable, the impression left being that the pedicle was short.

Ovariotomy was performed on the 14th of February. Dr Begbie and Dr Weir were present. It snowed heavily during the time the operation lasted, and the light was very bad. The heart got feeble as she came under the influence of chloroform, and would not allow of the anæsthesia being pushed far. The abdominal wall was thick, and there was much fat over the peritoneum. The large cyst was emptied, and, along with some secondary cysts that occupied the pelvis, drawn out, after freeing it from some recent parietal adhesion, from a loop of intestine above the umbilicus, and from some older and firmer adhesions towards the right side. The pedicle was about an inch and a-half in length. It was retained outside with some pull upon the uterus, a double ligature having been first applied, in case it should be necessary to remove the clamp and allow the pedicle to subside into the abdomen. The intestines were distended and red, and filled up the pelvis so much that I did not get the cavity sponged so carefully as usual. After tying two or three bleeding vessels the wound was closed by deep and superficial silk sutures.

She looked very ill on being placed in bed; the heart's action was feeble and the breathing quick. Several opiate enemas were necessary in the afternoon to relieve pain and quiet restlessness. For the first three days there was severe vomiting and considerable distention, and the first dressings were soaked with red, somewhat fetid, serum. There was no perspiration, and the urine was scanty; but the pulse did not rise above 112. She gave us all not a little anxiety till the fourth day. After that she recovered well, and when taken down stairs by the end of the third week the wound was firmly cicatrized. She has since returned to the West Indies.

CASE XLII.—*Case of Tubercular Peritonitis. Exploratory Incision. Recovery.*

Mrs Main, from Glasgow, aged thirty-two, was sent to me in the spring of 1866, as a fit subject for ovariotomy. First signs of ill health came on four years ago, when, the catamenia being present, she took severe pain in the left iliac region. There was sudden suppression of the menses, and she was confined to bed for four weeks. Two or three months after she began to go about again she felt a tumour above the pubes about the size of two hands, which she could move about from one side to the other. She gradually increased in size, and underwent much treatment, by blisters, mercury, and various diuretics and purgatives, without getting any relief. For the last two years her general health has been fairly good. Latterly she has lost flesh, and has suffered more from distention and the weight of the tumour, but does not think she has increased in size for some time past.

She was unwell when I saw her, and the first examination was hurried. She measured forty-four inches. The abdomen was full and well arched, and the flanks were not more bulged than they usually are in cases of large ovarian tumours. It was observed that there was clear sound on percussion midway between the umbilicus and ensiform cartilage, but this was supposed to be due to a piece of adherent intestine, as there was a protrusion on coughing about the size of an egg just above the umbilicus. The right loin was clear, the left dull; besides, the history was so clearly that of an ovarian tumour that no doubt as to the nature of the case was then entertained. A number of friends were present, and there and then a day was fixed for operation.

More careful examination in a day or two distinctly showed that the fluid was free in the peritoneal cavity. Up to four inches above the umbilicus the sound on percussion was always dull, and what at first appeared a hernial protrusion was only fluid forced under the skin on coughing through some weak point in the wall. The uterus was movable, and the roof of the vagina felt high and tense. Still the patient's statement was so circumstantial as to the presence of a lump, the size of her two hands, in the abdomen at the beginning of her illness, that though no solid tumour could be felt it seemed most likely that one did exist concealed by the ascitic fluid. Dr Matthews Duncan, and Dr Haldane, who now saw her, concurred in this opinion, and the diagnosis written down was, "Case of ascites, with *probably* an ovarian tumour." The doubt now entertained was explained to the patient, and it was agreed, with her consent, to make a small incision, tap, and remove any tumour if present.

On the 6th of March I made an incision an inch and a-half in length, and exposed the peritoneum, which was of a deep leaden colour. Three and a-half gallons of clear yellow serum were withdrawn, and the edge of the peritoneum was seen to be studded with small granular transparent bodies. As I was about to introduce a stitch to close the puncture, an irregular looking mass, near the ribs, on the left side, caught my eye, and thinking that, after all, I had to do with a thin-walled adherent cyst, I separated the peritoneum for several inches round, enlarging the wound to about three inches; then finding I was separating the peritoneum, and not a cyst wall, I enlarged the puncture made by the trocar, and saw that the whole peritoneum was studded with transparent, hard, glassy-looking bodies from the size of a pin head to that of a pea. The mesentery and intestines were in some places bound together; the uterus and ovaries quite healthy, except that their peritoneal covering partook of the general peritoneal disease. After sponging up as much fluid as possible, the wound was closed by three silk sutures, and ten days afterwards the patient left her lodgings, not the slightest bad symptom having followed this little operation. I have unfortunately lost sight of her, and do not know her address, but I have given her name in case she should at any future time come under the care of any of my Glasgow friends.

CASE XLIII.—*Multilocular Ovarian Tumour. Four times Tapped. Ovariotomy. Death two days after.*

C. R., aged twenty-five, was sent to me in March 1866 by Dr Sanders. The tumour had been detected three years ago, and within the last nine months she had been tapped four times. Her girth was forty-two and a-half inches, and the length from the ensiform cartilage to pubes, twenty inches. The uterus was drawn nearly out of the pelvis to the left; it was slightly movable. The abdominal wall was thick, and the cyst was too tense for accurate diagnosis.

She was a stout healthy-looking woman. The lips were somewhat anæmic; she had habitually cold feet; the pulse was weak, and the heart's action unusually feeble. The skin was remarkably dry and scaly, and the hands felt like horn. Altogether, she looked a stronger woman than any one I had operated on for ovarian disease, and the prognosis given was very favourable; for my previous twelve cases had recovered, and her chances seemed better than any of them. It was evident that ovariotomy was now her only resource, as the intervals between the tappings were becoming each time shorter.

Ovariotomy was performed on the 22d of March. Dr Duncan, Dr Sanders, and part of his clinical class, were present. There were extensive and unusually firm parietal and omental adhesions, chiefly above the umbilicus, and the bleeding from these was very free. After breaking down some secondary cysts the operation was finished in the usual way. There was a good deal of red serum in the abdomen and pelvis. On account of the very dry state of the patient's skin I was more than usually careful to sponge this all away. I am now satisfied that the sponges were used too freely. The cyst wall and contents weighed thirty-four pounds.

In the course of the afternoon she required two opiate enemas. By evening she was quiet, though flatulence was rather troublesome. The skin was hot and dry; the pulse was 115. There had been no perspiration, but the urine was abundant. There was no vomiting. She had a pretty fair night. In the morning the pulse was 90; skin very dry and hot; urine copious. There was no distention. She felt tired, but her expression was good. When seen in the afternoon she was quiet, and seemed to be doing well. Twenty-eight hours after operation she suddenly became very restless and flushed; the pulse rose almost at a bound to 130; the breathing was shallow; and the first cardiac sound was almost gone. She had a quiet night, but by morning the pulse was imperceptible, and she died forty-eight hours after operation, being quite sensible to the moment of death, and looking as if in perfect health.

The wound was well united; the sutures on the peritoneal surface not visible. The small intestines were generally adherent by healthy lymph, and there was about half-a-pint of serum in the pelvis. There was not a particle of blood clot anywhere. Unfortunately the heart was not examined. That the cause of death was due to a fibrinous coagulum in the right side of the heart I have little doubt.

CASE XLIV.—*Multilocular Ovarian Tumour. Once Tapped. Adhesion to Uterus. Ovariotomy. Recovery.*

In April 1865, I met Dr Sidey to consider the question of ovariotomy in one of his patients, fifty-seven years of age. The disease had existed three years, and she had for some time been suffering from the increasing distention of the abdomen, which measured forty-seven inches in circumference. She was thin and sallow, but healthy looking. The uterus was drawn out of the pelvis, and felt so incorporated with the cyst that we considered it safer to recommend that she should in the meantime be relieved by tapping, and four gallons of fluid were removed from nearly an unilocular cyst. There was an unusual amount of flatulence and distention for nearly a week, but the patient thought little of it, as she had suffered in a similar manner after all her confinements. In a few days I was able to verify the opinion given before the tapping as to the adhesion that existed between the cyst and uterus.

By April 1866, the cyst had refilled, she had become much emaciated, and was anxious to be relieved of her burden. Ovariotomy was performed on the 11th of April. Dr Sköldberg of Stockholm was present. The diagnosis written down was "Cyst free above, but very closely connected with the uterus and upper part of vagina to the left side of uterus." For this case I had provided myself some time before with Koeberle's serre-nœud, kindly sent me by M. Elser of Strasbourg. It is a sort of ecraseur, four inches long. The cyst was exposed by an incision three inches in length, tapped, and drawn out. It was nearly unilocular. The connexion between the uterus and tumour was exactly as was anticipated, and it was impossible to separate them, for the posterior surface of the uterus formed part of the cyst wall. The serre-nœud was applied as close to the uterus as possible, and the loop of wire rope when tightened was an inch and a-half in diameter. The cyst, the base of which was almost cartilaginous, was then cut away as near to the wire as was considered safe, and the large mass of strangulated tissue was secured outside by passing through it two strong needles four inches in length. The whole was then freely touched with the perchloride of iron, and greased lint placed round it, to prevent any contact between the fleshy cut surface and strangulated portion, which was so large as to fill up the wound, rendering sutures unnecessary. The operation was completed in a few minutes.

In the course of the afternoon three opiate enemas were necessary to allay an unusual amount of pain and restlessness. By evening she was quiet, there was free perspiration and plenty of urine, but flatulence was troublesome. The wire of the serre-nœud was tightened from time to time as there was an occasional oozing. The dressings were soaked in yellow serum.

First day after operation.—Had a good night, but abdomen is much disturbed by flatus. Slough of pedicle nearly hard; it measures fully two inches in diameter, and from the distended condition of the intestines is already much depressed. It was again touched with the perchloride of iron and covered with blotting-paper to absorb any discharge. Some relief was obtained after passing the rectum tube. When seen in the afternoon, she was doing well, pulse 84. The large slough was hard and dry, but there was much strain on the needles which kept it outside. I was sent for in the evening about seven, and found that, during a sudden attack of vomiting, the slough of the cyst, along with the serre-nœud, needles, and greased lint, had passed into the abdomen. Some folds of bright red intestine were lying in the wound, and scattered about were fragments of the large glass heads of the needles. The heads of the needles were just visible and I pulled them out, but it did not occur to me, in the confusion of the moment, that such strong needles could have given way. A severe attack of vomiting now came on, and while it lasted the intestines were prevented from protruding by the pressure of the hand. When the sickness passed off, nothing was to be seen but the head of the serre-nœud. A transverse piece of wood prevented it from slipping in. The intestines were pushed back and the wound stuffed with lint. This was allowed to remain undisturbed till next morning, in the feeble hope that sufficient lymph would be thrown out to so far encyst the slough, which at the time was so hardened by the perchloride of iron as to be almost imputrescible. The vomiting continued during the evening. She was restless and anxious, complaining of severe abdominal pain; pulse 100.

Second day.—Quiet night after two opiate enemas. Lint soaked in red serum. Intestine coated with grey lymph. A piece of fresh sponge soaked in a strong solution of sulphite of soda was stuffed into the wound and frequently changed. The pulse continued all day at 120. Only one fit of vomiting. The abdomen is greatly distended, but flatus passes downwards sometimes with, sometimes without the assistance of the rectum tube.

Third day.—Had a restless night from frequent vomiting. Two opiate enemas procured some disturbed sleep towards morning. Is feeble and drowsy; pulse 130. Dressings soaked in fetid serum. The intestine is very closely adherent round the serre-nœud, and is marked by the wires of the instrument. The adhesion was gently separated, and three drainage tubes pushed down to the slough. Towards mid-day the pulse had risen to 140. Dr Sidey saw her in the afternoon and made the pulse 160, but it was so feeble and intermittent that it was difficult to count it. She looked extremely ill all evening, and was covered with a cold clammy perspiration, or rather transpiration. The stomach was irritable and would retain nothing, but strong soup enemas with brandy were given every two hours. The dressings were frequently changed, the wound kept very open and well syringed with Condy's fluid. About three inches of intestine is visible almost on a level with the skin.

Fourth day.—A very restless night followed by an equally restless day. Frequent attacks of dark-brown vomiting. The day was passed much as yesterday, the pulse ranging between 120 and 140. Soup enemata with brandy, and frequent cleansing of the wound every few hours.

Fifth day.—Bad night with severe vomiting, is jaundiced, and there is occasional delirium. The finger was passed down to the slough, about four inches, and adhesions very freely broken up. Condy's fluid injected till it comes away clear, then a bunch of drainage tubes passed down. Abdomen softer; flatus passing freely downwards; pulse 120. Was moved to a water bed.

Sixth day.—Restless night, tumbling and tossing about, and it is difficult to keep her in bed; frequent diarrhœa. The skin is dry and shrivelled and very yellow. Frequent attacks of vomiting towards afternoon of matter like chopped grass. Abdomen softer; pulse 116 to 120. Retains nothing but brandy. Wound kept as open as possible. There is no fulness of Douglas' space. The intestine has become much fretted. It is covered with granulations which bleed at every dressing.

Seventh day.—Bad night. Diarrhœa troublesome. Tongue dry and red; pulse 100 to 110. Discharge profuse and horribly offensive, pieces of black putrid matter coming away during each syringing. On putting down the finger, I felt and removed a piece of needle fully an inch and a-half in length. It was sticking firmly in the slough, but the free end projected upwards of an inch.

Eighth day.—Quiet night. Looks and feels better; pulse 104. Felt for the other piece of needle and removed it. Slough and serre-nœud still firm. Discharge very free and intensely putrid.

Tenth day.—Serre-nœud came away. Removed large pieces of slough with forceps. Abdomen now flat, finger passes downwards behind the uterus; a bunch of drainage tubes kept in, and Condy's fluid injected as before. The patient is always relieved after the dressings, and her restlessness for a time disappears. About a pint and a-half is generally thrown in. No particular temperature or strength of Condy's fluid is employed. Sometimes the water is warm, sometimes nearly cold. The patient never complains; indeed, the small intestine seems to be entirely devoid of sensation.

After this the recovery was uninterrupted. On the *twenty-seventh* day she was out of bed for the first time, the wound then admitting only a single drainage tube, which passed downwards five inches. On the *forty-second* day she went home a distance of six miles. The drainage tube fell out a fortnight afterwards, and was not replaced; the discharge soon ceased and she got into excellent health. At one time the recovery of this patient seemed almost hopeless, and had it not been for the faithful nursing she received, I do not think she would have got well.

CASE XLV.—*Semi-solid Ovarian Tumour, weighing 55 lbs. Spontaneous Rupture. Ovariotomy. Death eight days after of Septicæmia.*

On the 12th of April 1866, I saw a married lady forty-two years of age, with a very large ovarian tumour. She had just made the overland journey from India, and had been travelling for two months, having left Lahore on the 2d of February last. She had four children, the youngest five years of age. Scarcely eleven months had elapsed since her attention was first directed to the presence of a small tumour. It increased with great rapidity, and though doubts were entertained as to its real nature, the case was generally looked upon as one of pregnancy, and her leaving India for home was thus put off from time to time. It need hardly be added, that such a journey in such a condition was a great trial to her strength, but she was a woman of great resolution, and the fatigues of it were cheerfully borne.

She was much emaciated, and extremely anæmic. The pulse was 115, small and feeble. The lungs were compressed, and the heart pushed upwards towards the axilla. The ribs and ensiform cartilage were turned far outwards. There was œdema of the lower extremities, of the lumbar regions, and of the abdominal wall as high as the ensiform cartilage. The measurement at the umbilicus was fifty-three inches, and between the ensiform cartilage and pubes, thirty-one inches. She had entered on the last stage of ovarian disease.

After some days' quiet in bed, there was little change in her general condition. The pulse ranged between 112 and 120. She took her food well, and her nights were good. The tumour was very tense, and consisted of a semi-solid portion below the umbilicus, and of a large cyst above it; but such was the œdema of the abdominal wall, that it was impossible to form any diagnosis as to whether adhesions existed or not. The cervix uteri was almost beyond reach of the finger. The sound passed four inches, giving no information, however, as to the mobility of the uterus; and its introduction brought on an attack of pain, which lasted for several hours. There was a peculiar fulness and softness of the vagina, which was ascribed to serous infiltration of the pelvic cellular tissue. There was also a remarkably undefined state of the tumour in the right side, such as I never felt before, but which I would have no difficulty in recognising again.

There could be no doubt that this condition was the most unfavourable possible for ovariotomy. I had every hope, however, that after one tapping her general health would improve, and that ovariotomy might, after a month or two, be recommended with a fair prospect of success. On putting a trocar into the large upper cyst, nothing escaped, though the instrument could be moved in all directions in a very large cavity. The canula was filled with a dark amber-coloured jelly,—extremely tenacious. The tumour was therefore semi-solid, the prognosis consequently most unfavourable, and for some days I was doubtful whether it would be right to advise any farther interference. It was remarkable, however, that after this fruitless tapping there followed increased diuresis with profuse perspirations, and in five or six days the serous infiltration of the cellular tissue had everywhere disappeared except above the pubes. The abdomen became softer, here and there was faint crepitus, and the tumour could be seen moving freely with the respiration through the thin wall. There was still the peculiar swollen spongy state of the vagina, but the uterus was now slightly but distinctly movable from the tumour. Though much relieved, the pulse remained as before. This improvement did not last long, for her girth, which had fallen to fifty-one and a-half inches in a few days, again increased to fifty-three inches.

The question of operation was now calmly discussed. It did not seem probable that life would be prolonged for more than a few months, and she already felt that they could not be other than months of misery. On her asking me whether there was as much to fear as to hope for after the operation, I could not say that the chances of success and failure were even equal, but I thought, that of three such cases two would probably die after ovariotomy, and she knew as well as I did, that in no other way was there a chance of being restored to her husband and children.

After a good night, ovariotomy was performed on the 30th of April. Professor Hubbard of Newhaven, U.S., and Dr Sköldberg were present. It was necessary to break up the tumour, as nothing would flow through the largest canula. The upper half consisted of a large sac filled with thick dark jelly of the tenacity of glue. The lower portion was made up of small jelly cysts. These were broken up, and the whole finally withdrawn through an incision about seven inches in length, after separating some very slight parietal and omental adhesions. Extending from the right of the umbilicus, downwards into the pelvis, there was a broad rent in the tumour, but the contents were too viscid to have escaped into the abdominal cavity. The opposing peritoneum in the right iliac region was much thickened, presenting the appearance of a vesicated surface. Here and there were small transparent cysts attached to the peritoneum of the wall, intestine and mesentery. From the pelvis I brought up these small cysts by the handful, each one having apparently a separate vascular attachment. There was some ascitic fluid in the pelvis, which coagulated on exposure to the air. There was a great amount of chronic peritonitis visible in all directions, and for fear of exciting irritation I did not sponge so thoroughly as usual. This peritonitis was most marked about the head of the colon, where there were numerous large red granular patches. The pedicle was short and friable, and was secured by a clamp, and the wound closed as usual. The operation lasted about three-quarters of an hour. The broken down cysts and cyst walls weighed fifty-five pounds.

The operation was performed on Monday forenoon, and up to the following Friday evening everything went well. The wound was healed and the stitches removed. The pulse remained steadily at 112, lower than before the operation. She suffered from acidity and was occasionally sick, but she took her food better than most patients generally do after ovariotomy. She was calm and cheerful, wondering why she was kept so quiet, for she had suffered less than she used to do after her confinements.

On Saturday morning the report was, that she had not had a good night, on account of troublesome flatulence. She looked sallow, and the pulse had risen to 120. By afternoon the distention had increased, the epigastric hollow had disappeared, and the pulse was 130. In the evening she vomited some dark grumous matter, and after this had severe cardiac pain followed by syncope. She was freely stimulated, and by midnight she was again quiet and comfortable, and her pulse had fallen to 120.

Next morning there was an increase of the distention, and occasional vomiting. The clamp was lying loose, and was removed—the pedicle gradually sinking inwards. Moderate stimulation was carried on all day, the pulse remaining at 135. No relief of the distention could be obtained by enemas, the rectum tube, or by Faradisation.

On Monday afternoon the report is: Distention not so great. No discharge from pedicle, which has sunk far inwards. Has had a quiet placid day, looking quite herself, and talking cheerfully of the future. The tongue was moist, and cleaning at the edges. In the afternoon, slept several hours so quietly that the nurse could hardly perceive her breathing—the pulse was 125. This favourable condition continued till she was laid quiet for the night, when almost in a moment she passed into a state of extreme restlessness, with great heat of skin, and a full bounding pulse. Low muttering delirium quickly followed, and she died comatose towards morning, eight days after operation.

Decomposition set in very rapidly, and when an examination was made twenty-four hours after, it was difficult to make out exactly the morbid appearances. The wound was quite healed, and measured four inches in length—the end of the pedicle had become separated from its attachment to the skin, and was lying free at the bottom of the wound, surrounded by about a tablespoonful of fetid pus. The pelvis was shut off by a curtain of lymph from the general cavity of the abdomen. It contained about a pint of reddish serum, which coagulated on exposure to the air. Except in the neighbourhood of the wound, where the omentum and small intestine were glued together by healthy lymph, there were no signs of recent peritonitis. The signs of chronic peritonitis were as well marked as at the time of operation.

Though this operation was undertaken with a feeble hope of saving life, the disappointment at the result to all concerned was unusually great; for the ordinary and immediate risks of ovariotomy, which we all dreaded in such a feeble anæmic subject, had been safely got over, but the chronic peritonitis which existed at the time of the operation seemed to have gone on. Hence arose the distended condition of the intestines, causing the breaking up of the recent adhesions round the short pedicle, and its subsidence into the abdomen, leading to the absorption into the blood of some putrid matter which could not find its way externally. The lesson the case teaches is, not to delay ovariotomy till the last stage of the disease is reached; for had removal in this case been possible before the chronic peritonitis, set up by the rupture of the cyst, took place, I have little doubt that the result would have been different. I do not regret having made the attempt to save a valuable life, and the patient's friends had at least the consolation that she was saved from the misery that rarely fails to attend the last stage of ovarian disease, and which is so graphically described by Dr West:—" The pulse grows feebler, and the strength diminishes every day; and one by one each customary exertion is abandoned: at first, the efforts made for the sake of change which the sick so crave for are given up; then those for cleanliness; and lastly, those for comfort; till at length one position is maintained all day long in spite of the cracking of the tender skin, it sufficing for the patient if in that respiration can go on quietly, and she can suffer undisturbed. Weariness drives away sleep, or sleep brings no refreshing. The mind alone, amid the general decay, remains undisturbed; but it is not cheered by those illusory hopes which gild, though with a false brightness, the decline of the consumptive; for step by step death is felt to be advancing; the patient watches his approach as keenly as we, often with acuter perception of his nearness. We come to the sick chamber day by day to be idle spectators of a sad ceremony, and leave it humbled by the consciousness of the narrow limits which circumscribe the resources of our art."

CASE XLVI.—*Multilocular Ovarian Cyst, containing Hair and Teeth. Ovariotomy. Recovery.*

M. C., an Irish girl, seventeen years of age, was sent to me for ovariotomy by Dr Matthews Duncan. In June 1865 she had pain in the left side, with irritation of the bladder. In August she detected a small tumour, which increased rapidly after an inflammatory attack in October, which confined her to bed for a fortnight. In July 1866, it occupied the whole abdomen, the girth at the umbilicus being thirty-four inches. The uterus was high, and drawn to the left side; there was no evidence of adhesion. She was thin, but her general appearance was healthy, and her family history was good.

Ovariotomy was performed on the 1st of August. Professor Saxtorph of Copenhagen, Dr Duncan, and a number of other friends, were present. After tapping a large cyst, the incision was extended to the umbilicus, to allow of the escape of the semi-solid portion of the tumour. The pedicle was secured by a clamp two inches from the right side of the uterus, and the wound was closed by silk sutures. It was a fat cyst, containing hair and teeth. The whole weighed thirteen and a-half pounds. She recovered rapidly, and was going about three weeks after operation.

CASE XLVII.—*Nearly Single Cyst. Ovariotomy. Recovery.*

In July 1866, Dr Menzies took me to see Mrs N., aged twenty-seven, in whom he had detected a large ovarian cyst, after her first confinement, six weeks before. During her pregnancy she had suffered very much from the immense distention. When I saw her she was just recovering from an attack of peritonitis, which had confined her to bed for nearly three weeks, and there was still so much general tenderness that no very careful examination could be made. Her greatest measurement was forty-one inches, and the abdomen was everywhere soft. The uterus lay low in the pelvis, and was but slightly movable.

Ovariotomy was performed on the 16th of August. Professor Macrobin of Aberdeen, Dr Burns, Dr Cuthbert, and Dr Taylor of Canada, were present. The whole anterior surface of the cyst was closely adherent to the abdominal wall. After tapping, these adhesions were broken down, and the tumour removed, when it was found that there was no proper pedicle. The cyst was quite sessile. The clamp was therefore applied round the neck of the tumour, near to the uterus, and secured externally. The adhesions were vascular, and much sponging was necessary. The intestines were distended, and of a dark colour, and here and there patches of lymph were visible on them. The right ovary was twice the natural size. It felt rough, but as there were no cysts in it, we agreed not to remove it.

After the operation there was an unusual amount of pain from the beginning. Distention and colicky pains were troublesome; but the most severe pain was in the left groin and along the course of the anterior crural nerves, doubtless occasioned by the pull upon the uterus. For the first two days opiate enemas were sufficient to keep down the pain; but on the third day the suffering became excessive, and I was several times on the point of putting her under chloroform. Relief was at length obtained by injecting morphia, with Wood's syringe, into the groin, hip, pubes, or wherever the pain was most acute. The temperature continued to rise till the fourth night, when it was 103·3. The pulse had also then risen from 140 to 150, and the respiration to 30. Uterine epistaxis came on on the third day, and continued four days. The clamp was allowed to remain, though it was depressed to near the sacrum. For some days her condition gave rise to much anxiety. After the fifth day, however, all unfavourable symptoms gradually gave way; large sloughs of dead cyst wall were removed, she soon regained strength, and went home four weeks after operation.

The reports of Cases XLVII. and XLVIII. will be given afterwards. In one, the patient was sixty-five years of age, and the tumour, a large multilocular of 40 lbs. In the other the tumour was semi-solid, weighing 28 lbs. Both patients are nearly well.

ARTICLE III.—*On the Management of the Second Stage of Natural Labour.* By JAMES HARDIE, M.D., Manchester.

(Read before the Medical Society of Manchester.)

THE question of operative interference in the second stage of labour is one so important and so generally interesting, that I need make no apology for bringing it again before the profession, oft-discussed though it may be. Indeed the views which I have been led to entertain, and the practice which I have for some time adopted, are so much at variance with those generally received and inculcated, that it is becoming that they should be submitted to criticism.

The proposition to which I would invite your attention is this: *That in the second stage of a large number of cases of what is termed "Natural Labour," we may make use of our art in assisting nature, and thereby shortening the duration of labour, with perfect safety to mother and child; and that, this being the case, we are called upon to make a change in our practice accordingly.* I shall take it for granted, without entering into the question, that the forceps afford the best means of accomplishing this end, and the subsequent remarks will be based on this assumption. This will be generally conceded, though I by no means insist upon it. At present, I only seek the admission of the first proposition, and will then freely leave it to each individual to use whatever may most commend itself to him, whether it be forceps, vectis, air tractor, or something else.[1]

Though the strictures enjoined by the older writers, such as Denman and Osborne, against interference, are now all but universally considered as obsolete, still there can be no doubt that the effect of their teaching is perceptible in that of the schools at the present day. The principle of non-interference has been so skilfully embalmed in the axiom, "Meddlesome Midwifery is bad," that in our most recent works we find the propriety of it recognised as a thing indisputable, and have the question of the necessity of violating it most carefully discussed. And it is a well-known fact, also, that the whole profession is pervaded by a certain ill-defined feeling of timidity regarding the use of instruments—that they are not proper or not safe—so that, generally speaking, they are religiously abstained from as long as possible. But in order that we may have the matter clearly before us, let us refer to the published opinions of some of our latest authorities on the subject. Dr Collins, quoted by Dr Churchill, observes: "Let it be carefully recollected, at the same time, that so long as the head advances ever so slowly, the patient's pulse continues good, the abdomen free from pain on pressure, and no obstruction to the removal of the urine, interference should not be attempted unless the *child be dead.*" Churchill himself, writing in 1860, takes exception to this rule to some extent, and says that "when the second stage has lasted so long as to prove the inadequacy of the natural powers, or at all events as soon as the symptoms of a prolonged second stage make their appearance (quick pulse, dry tongue, fever, etc.), then we ought promptly to interfere." (Midwifery, 4th ed., p. 350.) Dr Murphy, in the second edition of his work on Midwifery, published in 1862, sums up his observations on the use of the forceps thus, "When the head is slowly passing through the cavity of the pelvis, interference with the forceps is not called for, because of the *time* occupied, but rather because of the *special conditions* of the case. The use of this instrument is only justifiable when some clearly proved necessity arises; the time occupied in a labour is, *seipso*, no justification," etc. (p. 280.) Lastly, Dr Hall Davis, writing in the present year, says: "So long as the head advances with the pains, and recedes on their retirement, the patient is safe from dangerous pressure on her soft tissues. If, on the contrary, the head has been *wedged in the pelvis in one position, under strong parturient action*, for five or six hours, we are bound, as a general rule, for the safety of the lives concerned, to extend our aid." (Parturition and its Difficulties, p. 72.)

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[1] The practice of Dr Figg, formerly of Bo'ness, will be known to many readers of this Journal. Dr F. turned all the children, and delivered them feet first. I do not imagine, however, that this mode will ever become very popular. I have heard, also, of several practitioners who are accustomed to carry a vectis about with them, and use it largely.

These, then, may be taken as an example of the dicta of our authorities at the present time, and, I take it, as the exponent of the usual practice at present pursued. I shall hereafter, however, call your attention to some exceptions to this on the part of several practitioners, who, to some extent, follow the course I now advocate. But these, I believe, are the rules which would be endorsed by the vast majority of our contemporaries in this country. We, therefore, find that we must do nothing whatever to assist a woman in an ordinary case of labour, not even though it may be lingering and tedious; but that it is only when we are absolutely compelled to do so, because of danger threatening the mother or child, that we may venture to interfere. (I leave out of consideration at present, the use of ergot, because it is generally given without considering that the natural process is thereby influenced, and because it is frequently inert.) No matter though the os uteri have been fully dilated for six or eight hours, and the child be still unborn, still, unless symptoms of inability or exhaustion present themselves, we are enjoined to wait on. Though the patient have been in strong labour for three or four hours after the rupture of the membranes, still, if progress be made at all, grave constitutional symptoms must have begun to make their appearance ere we should be warranted in interfering. Though we may have waited patiently near the bedside from nine in the morning till three in the afternoon, still neither does this matter. We must exercise our patience, and wait on still. Now, I would ask, why this reticence? Why this timidity? This is the point on which I am at issue with our authorities. Let me narrate a case or two, and apply the question to them.

Mrs Smith progressed favourably till the os was fully dilated, when her pains began to come on less frequently, and the head entered the pelvis very slowly. Soon they died away altogether, and for half-an-hour no progress was made. A dose of ergot was then given, and not long afterwards the pains returned; but they were slight and inefficient. So they continued for an hour or more, when stronger pains set in, and in four hours from the beginning of the second stage, the child was born.

Mrs Jackson sent for her medical attendant at 8 A.M. On arrival, he found the second stage fairly commenced, and pains coming on of fair strength and frequency. A speedy termination of the labour was considered probable. It was soon found, however, that the head did not make the progress it might have been expected to do; it advanced very slowly. Every morsel of ground was, as repeated examination showed, gained with great difficulty. Still the pains continued, one perhaps every five or ten minutes, and, on the whole, progress was made. The patient frequently complained and begged for help, but was told that all was going on well. Ergot was administered without much appreciable effect; and it was only after three and a-half hours' hard, continued labour, that the delivery was completed. The child gave some difficulty in getting respiration properly established.

Mrs M'Donald did well till the head was presenting under the arch of the pubes. Pains continued, but the head made no apparent progress. It came forward with each, but immediately receded to its former position when the pain passed off. This went on, more or less, for a whole hour in a very teasing manner, the attendant often mentally assuring the child's head, that if he could only get hold of it with his fingers and thumb, he would make short work of it. This, however, he did not do. The patient became tired and querulous. The pains diminished in frequency, and for half-an-hour nearly stopped, when two good strong ones occurred, which expelled the child.

Mrs Mackie was taken in labour of her first child early on Monday morning. Her attendant saw her several times during the day, and the first stage was completed about five in the afternoon. She continued to have good pains, and the head descended gradually to the perinæum, occupying an hour and a-half in doing so. The pains then left her, but recommenced in three-quarters of an hour. They continued pretty frequent and of good strength; but the tissues of the vagina were rather rigid, it being her first case, and it was only after another hour's continuous labour that the child was born. All along, the patient exhibited great restlessness and anxiety, particularly during the last two hours. She tossed herself about and cried loudly for help, defying all attempts to pacify her;

so that it was a matter of satisfaction to all when the labour was over.

Now, these are all cases such as we are constantly meeting with. A large proportion of our practice consists of such, or of others very similar. In all of them the natural powers are quite sufficient to complete the case, if we wait long enough, and the mother and child are daily reported to be "doing well." But I would ask, Why are we so terrified to lend nature a helping hand, when we see very well that she is in difficulty, and when so much suffering and anxiety are being endured? Why do we not step in and have the case easily finished in a few minutes, instead of allowing it to go on for two, three, four, or five hours? I go no further than this. I leave cases protracted for a third, or a half, or a whole day, out of the question, and would ask, Why allow any case to go on for the space of even *one hour* after the first stage is completed? Would it not have been more consonant with an intelligent perception of physiological facts to have supplied a substitute for the evidently too inert uterus in the case of Mrs Smith, or to have helped it in its laborious efforts to overcome the evidently too narrow or rigid outlet in the cases of Mrs Jackson or Mrs Mackie? And would there have been anything very dreadful in the surgeon's carrying out his wish in the case of Mrs M'Donald, by inserting a pair of "steel fingers," and bringing his tormentor into the world at once? I am unable to give a satisfactory answer to these questions, nor do I believe, that it can be shown that the truest and soundest practice would not have been carefully to have finished the labour in each case by instrumental assistance.

No one was a firmer adherent to the policy of non-interference in midwifery than was I at the beginning of my professional career; and never did one act more honestly according to his creed than did I. And yet, if such cases as I have narrated occurred to me now, I would assuredly use the forceps in each of them. I believe that there is far too much made of the danger of instrumental delivery. Women have the idea that it is something by all means to be preserved from; they speak of some friend having had to be delivered instrumentally, in an under-tone; they get flurried in the lying-in-chamber when the subject is mooted. Medical men, too, to a large extent, share in this feeling, and in some degree it is quite justifiable: for instruments are so rarely used till pathological symptoms have manifested themselves, that we must conclude that, when they are proposed, the patient is in some danger. I believe, on the contrary, that with proper care and undivided attention, the forceps are a most *harmless, safe, and altogether admirable adjuvant in everyday obstetric practice.* As such, I would strongly recommend them and to do my endeavour to uproot the strange idea that we are bound to leave our patient to her own efforts till her safety is endangered, and to some extent to save suffering, is the object of this paper.

Since my practice was influenced by these views, I find that, in the last 100 cases I have attended, I have used the instrument so frequently as in 28 of them, or in about 1 in every 3½ cases. In 5 of these cases, the head was still above the brim when I applied the instrument. I can also recall some in which I was only prevented by questions of policy from having recourse to it. To say this is, of course, to say that I rarely go to a case of midwifery without taking the forceps with me. I do not use them to obviate danger, but to abbreviate anxiety and pain, and because I am convinced that I can do so with perfect safety. If there appears to me the slightest hindrance to the ready passage of the head, either from narrowness of the canal, or deficient uterine action, I make no hesitation about the matter, but apply the forceps, and finish the case. Of course, one has to be guided in his mode of manœuvring by the character of the patient; for, although we may often enough be entreated by herself to give her assistance, still this is not the most common case we meet with. Many have had natural labours previously, and see no reason why they may not again; and then, also, the firmly-rooted prejudice has to be contended with. It is thus sometimes necessary to explain everything, and have full permission, while, in other cases, I have used the instrument without the patient's knowing anything about it till extraction was being accomplished. Let it be done calmly, and with great deliberation. There must be no "fussiness" about it, but it must be made quite light of, as if a matter of everyday occurrence. It is a good plan never to let the blades come in contact with each other outside the pelvis, so that the metallic noise, always so disagreeable to a patient, may be avoided. I therefore carry them in a bag, with a compartment for each blade. If short forceps, such as Simpson's modification of Ziegler's, are used, which do very well when the head is just at the outlet, the whole operation can be accomplished with the utmost quietness and ease. Generally, I prefer Simpson's combined long and short—partly because they suit any case, and partly because I have become accustomed to them. I have only to complain of their bulk and weight.[1]

Now, these doctrines must not be considered as entirely novel. I have quoted from systematic works on midwifery, showing what I take to be the ordinarily recognised principles of action. Let me now, however, refer you to two or three papers, in which a much more liberal degree of assistance is recommended. In the Brit. and For. Med.-Chir. Rev., vol. xxxvi., there is a paper by Dr Geo. Hamilton of Falkirk, on "The Mortality from the Use of the Forceps," in which the writer states that he used the instrument 41 times in 305 cases,—rather less than 1 in 7. Dr Hamilton has since published two or three papers in the Edinburgh Medical Journal, narrating his adherence to this line of practice, and its continued success; and he claims to have delivered 731 children alive in succession,—excluding premature cases, children already dead, and consultation cases. Mr Harper, in the first volume of the Trans. of the Obstet. Soc. of London, states that he has used the forceps once in every 26 labours. This is much less frequently than I would have supposed, from a perusal of his masterly paper. I would specially refer any one interested in the subject to the latter, as containing very sound views on several misunderstood questions. Let me only quote here from it a valuable table, which he has drawn up with much care and labour, showing the result of his practice, as compared with that of Dr Collins, Drs Hardy and M'Clintock, and Drs Johnston and Sinclair, respectively. The table has reference only to cases of uncomplicated head-presentations—cases in which the forceps were available—and excludes also deaths from peritonitis (which is scarcely justifiable, however,) and from other diseases, from which the patients happened to be suffering when labour supervened. It shows in a striking manner how the diminution of mortality, step by step, accompanies the increased use of the forceps:—

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[1] Mr Young of Edinburgh has described to me a modification of these, which he has devised. The shank is in two pieces, which dovetail into each other. Union is made complete by means of a ring, which passes over the place of junction. These may obviate to some extent the former objection. The instrument was alluded to in a recent number of this Journal.

	Forceps Cases.	Fœtal Deaths.	Maternal Deaths.	Forceps Duration.
Collins,	1 in 694,	1 in 26,	1 in 329,	38 hours.
Hardy,	1 in 355,	1 in 20,	1 in 334,	35½ hours.
Johnston,	1 in 60,	1 in 35,	1 in 502,	29½ hours.
Harper,	1 in 26,	1 in 47,	1 in 1,490,	16 hours.

Dr M. Ryan (Dub. Quart. Journ., Feb. 1864,) has used the forceps in 10·3 per cent. of his cases. Lastly, I have been very much pleased with a lecture, by Dr Graily Hewitt, in the Lancet of Nov. 26, 1864, as giving evidence of a disposition in our schools to treat the question on its own merits, unfettered by traditionary rules. To this paper I am indebted for the reference to Dr Ryan's. These statistics are all very well, so far as they go; but, inasmuch as the forceps must have been frequently used in what every one would denominate "natural labour," why use them so seldom as Dr Hamilton even?

What have we, then? Although, in these 28 cases of mine I have referred to, all the mothers made excellent recoveries except one, who died of acute tuberculosis on the 25th day, and in whose weak state of health I considered myself peculiarly called upon to do all I could to save suffering; although all the children were born alive, and without injury; and although in, let us say, 25 of them, the results would probably have been as satisfactory had I interfered in none of them; still, considering the mode in which the forceps have been deprecated by many, I might claim credit for at least having done no harm. But if, in addition to this—if, besides, by using the forceps once in 3½ cases, I have ultimate results as satisfactory as other people, I can also save my patients from an incalculable amount of anxiety and suffering, which I decidedly claim for myself, then I submit, it rests with those who differ from me to show that the forceps ought *not* to be used in those cases. This is the lowest ground I take, and is an argument which my own cases will bear out. But if, from a survey of the results of extensive practices, in which the forceps have been freely employed, it is found that a great saving of life is also effected, then, certainly, it is becoming that our opponents should reconsider their position, and refrain from opprobrious epithets.

It is necessary, however, that we should notice certain *objections* which may be brought forward against such frequent use of the forceps as I here advocate. First of all, certain *dangers* are said to be incurred by their use,—such as that the *soft parts of the mother may be injured* in their introduction; that the *perinæum may be lacerated;* that, by withdrawing the child too rapidly, *the uterus might not contract properly.* Now, with regard to the risk of injuring the maternal passages, I believe there is a great deal of misconception. We have been taught that forceps are dangerous, and believe it, without testing the truth. Undoubtedly, if reserved for labours in which the head is impacted in the pelvis, and the tissues have become swollen and inflamed, or in which the patient is otherwise in a state to give rise to anxiety, there may be danger, either real or apparent, from their use. In such cases, I can readily understand that it may be a difficult matter to introduce the forceps without some amount of bruising, or that the dragging of the child through the narrowed and inflamed passage may produce mischief; and I can, to some extent, sympathize with Dr Davis, and the authors I have quoted, in their doubt as to whether the case should be further left to the natural efforts, or be treated by the forceps or by the crotchet. But I am altogether at variance with them as to the propriety of allowing such states to supervene. *The head ought never to become impacted, nor the tissues swollen.* If this be guarded against, and the forceps be used while there is abundance of room, then I maintain that there is absolutely no danger from their skilful employment; and I might appeal to the recorded testimony of many writers in corroboration of this, and to that of any one who has used them in such circumstances. Using the forceps in natural labour, and using the forceps in protracted labour, are two entirely different things; but almost every writer has shut his eyes to this consideration. With the latter condition I have at present nothing to do.

No doubt it is quite a possible matter to push a blade through the vagina, or to take hold of the cervix uteri as well as the child's head, but such mishaps must not be attributed to the forceps. The responsibility lies at the door of the operator. The simplest procedure may clumsily become the cause of death. "To reason that such effects are the necessary concomitants of the forceps is very much the same as it would be if we were to say that, because, in the operation of lithotomy, nervous or inexperienced operators have cut deeply into the rectal pouch, and, becoming confused, have not been able to open the bladder at all; therefore, that the operation for stone is one which ought not to be performed." (Mr Harper, in paper alluded to.) And yet, although a certain amount of neat-handedness is desirable in all surgical procedures, I cannot think that any unusual dexterity is requisite for the safe use of the forceps. It has always appeared to me so perfectly simple that I am at a loss to understand how such unfortunate accidents can have occurred. Yet a few are on record. Are our teachers not to blame? How many students are taught how to use their hands?

That the perinæum is liable to be ruptured is one of the most frequent objections. As far as my own experience goes, I cannot admit it as one. It is true that in one case which impressed itself on my mind at the time, the perinæum was injured to a considerable extent, but this was owing to the neglect of the precautions necessary to obviate it. The perinæum must always be well supported, and great care must be taken to turn the handles of the forceps well over the pubic arch during extraction. On no account should traction be made in the long axis of the body at this stage. In the case referred to, the patient was very restless, and I, being somewhat hurried on this account, failed to bestow proper attention on these points. The perinæum was long, and would undoubtedly have given way even had I not interfered, but I imagined that I had made it worse than it might have been. In no other case—and I occasionally make an examination on purpose to ascertain this matter—have I met with more than the slight tear which, as Sir J. Simpson has shown, is the usual accompaniment of natural labour. This latter fact must be borne in mind, for if after using forceps we find the perinæum has lost its integrity, the instrument must not therefore be necessarily blamed. I am not sure that straight forceps are not objectionable on account of a risk of this accident. The posterior corner of the point may project beyond the head, and, in turning them over the pubes, this may press injuriously on the already tightly-stretched tissue. With curved forceps this is impossible.

Another objection which we may meet is, That this is an unwarrantable *interfering with nature.* What can be more essentially natural than the process of parturition, and yet you are constantly meddling with it! Nœgele even goes so far as to maintain that some salutary change is effected in the constitution by the pains a woman has to undergo, and that a removal of the difficulties must render her liable to disease, either immediate or at some remote period. (*Vide* Murphy, p. 278.) But we are constantly interfering with nature, and in no case more than in this very instance of parturition, even in the present state of our practice. We think nothing of giving a dose of ergot, or of manipulating the uterus to excite contraction—but that is not leaving the matter to nature!

Did nature intend an obstetrician to be present at every case of human parturition to support the woman's perinæum! And did she inspire mankind with an instinctive knowledge that no time must be lost in girding the patient with a binder! Instrumental delivery may be something more than these, but this is only in our estimation, and, even then, it is only a question of degree. Again, a few years ago, I was on a visit in the country, and heard that there was a parturient cow in the byre. I was curious to see the process, so betook myself to the scene of action. Great was my astonishment to find the cow little more than a mere passive spectator, and the little one being dragged into the world by the united efforts of a host of men and women. I offered a gentle remonstrance on the natural-process grounds, but was smiled at, and told that this was the usual custom there; and I believe that it is so throughout the country. Well, the cows do not seem to be any the worse for it,—why should the human female?

But in the case of the latter, is it really an interfering with nature? Have we a perfect *beau ideal* of natural labour? What is the meaning of those troublesome arrests of progress we are ever meeting with, during which the pains so often die away?—of those slow protracted cases which just manage to finish themselves without assistance and no more?—of those ruptured perinæums occurring in almost every case? Is this the manner in which we would expect nature, left to herself, to accomplish her work? Or is it not much more probable to regard them as showing that, owing to some cause we cannot trace, there has been a departure from the typical conformation of the skeleton? We can easily understand that it is highly probable that many changes and modifications may have taken place. Men have become dwarfed, or have inherited a tendency to scrofula, or to the formation of tumours, or to mutism, or something else, from a departure from the laws of nature,—laws not always understood, but nevertheless existing in full operation. So it may have happened that the pelvis may have become altered to some extent, although we may not be able to detect it. The pregnant uterus must get rid of its contents, and if its contractions are powerful enough to overcome these modifications, all is well. In some cases this may take place in half-an-hour, in some in one hour, in some not for six or eight, or a whole day. But sometimes they are so great that they absolutely cannot be overcome. Where, then, does labour cease to be natural? Is it not till the last instance? But we interfere in cases less severe than this: why may we not, therefore, in cases of an hour's duration? In addition to this, it is a well-known fact that civilisation has a most marked effect in increasing the size of the head, and, as has been well shown by Professor Simpson, a very slight difference in this respect makes a material difference in the character of the labour. In civilized nations, and more particularly among the upper classes of society, there is, also, always more or less anxiety on the part of women concerning the progress of labour, and this must be allowed to have a certain influence in rendering our *natural* labours *abnormal*. But I need not enlarge on this topic, as, be the cause what it may, we are all aware of the fact that among the more uncivilized races parturition is a much more easy matter than among the remainder of mankind.

It comes, therefore, to this, that, say in three-fourths of all the cases we have to do with there has been a departure from the typical and natural relationship of power of uterus, size of child, and shape and size of maternal passages; and, therefore, we may, if we choose, legitimately step in to assist nature to overcome the disproportion.

Granted, then, that there is no moral nor practical objection to instrumental interference in cases of even slightly prolonged labour, I would say that our duty as physicians is to give our patient the benefit of our knowledge and skill, and to assist her in her extremity to the best of our ability.

There are many *advantages* we gain by an early interference; but on these I shall not dwell. Of course we save a great deal of time and a great deal of suffering. Although perhaps somewhat more painful than the natural efforts alone just at the time, still, as Ramsbotham remarks, the aggregate of pain is no doubt diminished, and this, it will be granted, generally to a very large extent. By early interference, we apply the forceps when it is an easy matter: we do not find the head impacted against the tissues of the mother: and thereby we influence, in an important degree, the results to the mother and child. The forceps are too often used too late to avoid local and constitutional mischief; and local and constitutional mischief often result even when the case is terminated by the natural efforts after all. Often, also, as has been before remarked, the uterus becomes tired out when long in action, and after the expulsion of the child, the placenta may be retained; or the placenta may be expelled, and still we may have slow and unsatisfactory resumption of the natural size of the organ. Clots collect, and are retained — fetid discharge — septicæmia. We shall also, undoubtedly, very frequently avoid a more serious operation. On referring to Churchill's Manual, I find that whereas, among British practitioners, the forceps are used in one in every 342 cases, craniotomy is had recourse to in about a similar number. Among the Germans, again, the forceps are used once in 160 cases, and the crotchet but once in 1409. It is to be hoped, however, that these figures, as far as regards British obstetricy, are now somewhat out of date; still, they serve to show equally well how often our timidity may lead to results which might quite easily have been obviated by a little more liberality. But such risks are altogether beyond the reach of consideration in the free use of instruments which I have attempted to advocate.

In conclusion, I would only say that I would advise doubters "to give the system a trial," and am convinced that, by-and-by, many will become converts.

ARTICLE IV.—*On the Pathology of Cholera Collapse.* By HORACE JEAFFRESON, M.D. Lond., late Resident Physician to Cholera Wards of the London Fever Hospital.

To what, at its onset, is due the collapse stage of cholera? Should this question ever be satisfactorily settled, we may still be as far off as ever from diminishing the fearful death-rate of the disease. Nevertheless, most authors who have written on cholera have endeavoured to frame some theory on the subject, more or less supported by facts, either for the simple purpose of arriving at a closer appreciation of the malady, to suggest a line of treatment to be pursued, or to justify that which had already been adopted. Although an erroneous theory does not necessarily lead to wrong practice, it is very likely to do so. It is from this belief that I have endeavoured, in the following pages, to indicate what to my mind appears to have claims to be considered the efficient cause of the algide stage of cholera.

Even in the most rapidly fatal cases of the disease the stage of collapse is not that which first calls for observation. However rapidly it may supervene, there are either symptoms before death, or post-mortem evidences to show that it is not the primary result of the cholera poison. Now, although the first evidences of the attack may be most conveniently expressed as caused by some poison, the nature of which it is not my intention here to discuss, it still remains to be proved whether, among the primary effects of the poison, conditions are not called into existence in the body upon which mainly depends the development of the algide stage of cholera, rather than upon the continuance of any peculiar action of an original specific cause or poison; whether, in fact, secondary causes do not come into operation, of a more familiar character, and more readily to be dealt with.

It is very generally admitted by some of the most distinguished writers on cholera that the symptoms of the so-called secondary fever are more the result of the previous profound derangement of the system than of the presumed continued action of a cholera poison. I am of opinion that this view may be carried much further, and that in endeavouring to express the relation of the various stages of cholera we must keep fully in view the doctrine of primary and secondary causes. Just as in explaining the revolutions of the heavenly bodies, one cause—viz., projectile impulse—is considered to have acted once and for all, after which their course is determined by secondary causes expressed by laws affecting all matter in common, so I believe, in cholera, having once granted a certain action of a special cause—the cholera poison,—we must endeavour to explain the subsequent phenomena of the disease in accordance with the known laws of the effects of certain diseased actions on the body, without having continually to speak of this or that phenomenon as produced by an original specific cause.

Keeping the above considerations in view, I will proceed to review those effects which intervene between the commencement of the disease and the development of the algide state, and to see which of them may be deemed worthy of being regarded as an efficient cause of collapse.

First, As regards the drain of fluid from the blood. In the majority of cases of cholera the profuse alvine discharges of rice-water fluid form so prominent a symptom, that early in the history of the pathology of cholera they are found to have been regarded as the main cause of collapse. Subsequently this view was abandoned as at variance with those cases, though rare ones, in which the drain from the bowel was very inconsiderable, though they were attended with profound and rapidly fatal collapse. The value of the "Notes on Cholera," lately published by Dr George Johnson, greatly depends on the prominence he has given to such cases, which are very essential to be remembered in discussing the causation of cholera collapse. When an epidemic such as the present is setting many minds new to the inquiry to attempt the solution of the problem, Dr Johnson's little work comes very opportunely, to prevent time being wasted through the attention being directed into the wrong channel. He cites part of the following quotation from p. 130 of the "Report of the College of Physicians on the Morbid Anatomy and Pathology of Cholera, 1853." "Cholera poison is not known to produce its fatal effects without the characteristic affection of the intestines. Cholera sicca, in a strict sense, does not occur, for although the disease may be fatal without any evacuation, the intestines after death, in such cases, have been found to contain the rice-water fluid. In one instance of this kind which came under our observation, on a post-mortem examination, the large intestines contained healthy fæces, whilst at the upper two-third of the small intestine the mucous membrane presented the ordinary changes induced by the cholera process, and the rice-water effusion was abundant."

One similar case has come under my own notice, namely, that of a boy, admitted into the London Fever Hospital, July 30, in profound cholera collapse. His father had died of the same disease the day before. No distinct history was obtainable, but the boy had vomited freely on his way to the hospital. He died ten minutes after admission. A post-mortem examination showed his rectum to be occupied by nearly formed fæces, while the small intestines were filled with a considerable amount of grumous rice-water material, mucus, and some pale pink, strawberry-cream-coloured fluid. The small intestines themselves were intensely congested, pink, fleshy, and œdematous. From these and numerous nearly similar cases, mentioned in the "Report" above quoted, which show that there is no relation between the amount of the alvine discharges and the rapidity of development or profoundness of the collapse, it may now, I think, be taken as a settled point, that although the profuse discharges must necessarily have considerable influence on the course of the disease, they cannot be regarded as the efficient cause of cholera collapse.

The theory of the algide state being due to the contraction of the pulmonary artery and its branches, next calls for consideration. The prominent position recently given to this view is due to its enunciation by Dr Johnson in the work mentioned above. Having performed a real service in giving a *coup de grace* to the already nearly abandoned purgation theory of the causation of collapse, he has proceeded to frame an explanation of the onset of the algide symptoms on the basis of two assumptions. *1st*, That there is a definite cholera poison circulating in the blood; and, *2dly*, That it is the special function of that poison, through the blood, to cause contraction of the pulmonary artery and its branches, whereby the amount of blood sent to the lungs is diminished, to the effects of which he refers the collapse stage. There is no mistaking the rigorous absoluteness with which Dr Johnson states these views. At page 49, he says, "The blood thus poisoned excites contraction of the muscular walls of the minute pulmonary arteries, the effect of which is to diminish, and in fatal cases to entirely arrest, the flow of blood in the lungs." Again, at page 55, "The most interesting and conclusive evidence that arrest of blood in the lungs is the true key to the pathology of choleraic collapse is to be found in the simple yet complete explanation it affords of all the most striking chemical phenomena of the disease." I will quote one more passage from p. 68: "The remarkable arrest of blood in the branches of the pulmonary artery, which I have shown to be the essential cause of choleraic collapse."

For the present purpose, and for the sake of argument, we will grant the truth of the first proposition, that there is a definite cholera poison circulating in the blood. It remains to inquire into the nature of the evidence in favour of the second, viz., that it is the special function of the cholera virus to contract the pulmonary artery. My own experience in cholera post-mortems, and much of the wider observations of others, tend to show that less blood than normal *is* sent to the lungs through the pulmonary artery, probably owing to a contracted state of that vessel. To this diminished supply of blood to the lungs, together with the general feebleness of the circulation, the *cyanosis* of the collapse stage is admitted to be mainly due; but it has yet to be proved that the contraction of the pulmonary artery is in any way out of proportion to that which occurs in the other arteries of the body. During life the thready arterial pulse, or its absence, and the fact that when even large arteries have been cut down upon and opened they have been found contracted, and a flow of blood from them barely to be obtained, points to the condition of the systemic arteries; and according to my own experience in post-mortems on patients who have died from pure and rapidly fatal cholera collapse, the kidney and spleen are, for their parts, as anæmic as the lungs, though from the smaller proportion that the bloodvessels bear to the parenchyma in those organs the diminution in actual weight is not so marked as in the case of the lungs. The liver does not reach quite its normal weight, but is fairly full of blood; which is readily explained by the small proportion that the blood supplied to it, through the muscular-coated contractile hepatic artery, bears to that which reaches it through the vena portæ,—less contractile, and bringing blood from acutely congested intestines. Were the collapse stage of cholera and consequent death due to the peculiar mode of asphyxia, resulting from the special contractile influence of the cholera poison on the pulmonary artery, although that presumed peculiar effect of the poison would account for the lungs themselves not being gorged with, but empty of blood, it would not explain the absence of the ordinary post-mortem appearances found after death from causes in which asphyxia took a prominent place, viz., engorgement with dark blood of all the internal viscera; yet this state, as far as my experience goes, is notably absent. On the other hand, I have found the kidneys and spleen, as well as lungs, appear to the eye anæmic, while the evidence of weight has shown them to be less full of blood than usual, so as not to obtain the average weight of those organs in health. In support of this statement I refer to the first six cases given in the body of this paper, especially to Case 4, and to the Tables I. and II. accompanying them. Leaving this question of the contracted state of the general arterial system, the point to look to is, does Dr Johnson, or, failing Dr Johnson, does any writer on cholera mention facts to prove that obstruction to the flow of blood through the lung, the consequent obstruction to aëration and the embarrassment to the breathing, invariably *precede* the other signs of the onset of cholera collapse, or, at least, take a marked lead among the symptoms? It is strange, that though the establishing of the fact of this precedence should be the very ground upon which Dr Johnson's theory ought to be securely based before it is taken as a starting point for dogmatic assertion, that it proves the true cause of cholera collapse, Dr Johnson does not bring forward a single instance from his own experience to show that such a priority exists in the symptoms referable to the obstructed flow of blood through the lungs; nor does he quote the experience of others to supplement his own reticence on the subject. I have failed to find any record of such experience, and I have not myself seen anything to indicate that the signs of pulmonary obstruction in any way take the lead among the symptoms of cholera collapse; on the contrary, I have known the respiration to be quite easy, and noted it as such, while cramps, coldness, small rapid arterial pulse, and inelastic skin, indicated the advance of collapse. Dr Johnson's reticence on this point is the more remarkable, as the rest of his arguments to prove that pulmonary obstruction *causes* collapse only go to establish, what has for many years been an admitted fact, that defective aëration of the blood is always *associated* with the algide state.

Even his ingenious argument—based on the continuance, during collapse, of some secretion of milk, a fluid requiring but little oxygen for its formation, in which respect it resembles the bile, an abundance of which is always found in the gall-bladder,—contains nothing in support of the view that a cholera poison in the blood induces contraction of the pulmonary artery, and that the obstruction thus produced is the "proved essential cause of cholera collapse." Such a cause has yet to be determined. I might, perhaps, better say causes; which would more nearly express what I believe to be the real state of the case, though I shall endeavour to prove that one deserves to be considered the main and leading factor. In searching for such a cause, several points must be kept in view,—first and foremost, the cause must either be *proved* to be the antecedent of the collapse stage, or, if not proved rigorously, the facts of the disease must render the presumption almost a certainty;—next, the main cause, in conjunction with the secondary causes which it calls into operation, must be sufficient to produce the symptoms of collapse, in accordance with the known laws of the physiology of the human body; and further, should the patient recover from the algide state and do well, there must be presumptive evidence that the cause had remitted,—and in such cases that die from secondary affections, the evidence of post-mortem examinations should go to show that the cause of collapse had ceased to operate about the time that the symptoms of collapse had passed off. The statement of what I consider is the efficient cause of cholera collapse, and which I believe fulfils the above requirements, I will defer till I have given a brief abstract of the disease and detailed the post-mortem appearances observed in six cases which died in profound and rapidly fatal cholera collapse, and of four cases which recovered from the collapse and died from secondary affections. I would here mention that in relation to the post-mortem appearances, the rapidity of the fatal result is of great importance. I believe that some of the discrepancies found in the descriptions of the morbid appearances met with after death in the collapse state would be explained by reference to the duration of that state prior to death. I regret that I cannot bring definite proof to support this opinion. If by the light of the following cases one finds a definite and constant lesion present in death during collapse—which state there is evidence of its preceding—while it is less defined or even absent in those who die in a subsequent phase of the disease,—I think we shall be warranted, other things supporting the view, in considering such lesion the cause, or intimately associated with the cause, of collapse.

CASE 1.—Mary W., aged 45, stated to have had no premonitory diarrhœa; was taken with violent diarrhœa and vomiting at 6 A.M, 28th July, which continued all the morning, accompanied with severe muscular cramps. Admitted into cholera ward of the London Fever Hospital at 2.30 P.M. the same day. Algide state was then marked; temperature in axilla 94½°; eyes sunken; lips and nails blue; skin inelastic; voice almost gone; pulse 108, extremely small and feeble; rice-water purging; vomiting frequent. Subsequently the collapse became more profound. Some of the stools passed were pink, and others chocolate-coloured from admixture of small quantities of blood; urine was completely suppressed. Pulse at wrists and brachials ceased; respirations became sighing, full, and slow; temperature at axilla fell to 94°; and woman died, without any sign of rallying, at 5 A.M., 29th July, having been ill for twenty-three hours.

Post-mortem Examination, same day, 10 A.M. *Heart*, right side moderately distended with black blood, which coagulated after exposure to air. *Lungs*, do not quite reach sides of thorax, to which they are bound by old stringy adhesions; tissue dry, and containing less blood than normal anteriorly, some congestion posteriorly, of hypostatic character; weights, right, 12¼ oz.; left, 11¼ oz. *Liver*, fairly full of blood, which was less fluid than ordinary; tissue, normal; gall-bladder contains 3½ oz. of bile; weight, 44 oz. *Spleen*, small, of pale colour, anæmic; weight, 3½ oz. *Kidneys*, healthy, contain rather less blood than normal; cortex, pale; capsule separates smoothly; stellate veins only slightly marked; weights, right, 3½ oz.; left, 3¾ oz. No urine in bladder, which was healthy. *Stomach*, mucous membrane only slightly injected; of pale pink colour. *Small intestines*, peritoneal surface minutely injected; pink; sticky from scanty amount of viscid secretion, only sufficient in quantity to give a slimy feel to surface and adhere in fine threads to finger; no definite lymph, but peritoneum presents a finely granular appearance from fulness of injected vessels; the coats of the intestines themselves are thickened, heavy, and deeply congested throughout; tint of congestion varies from moderate pink colour to bright red and venous purple colour, with patches of distinct ecchymosis. These conditions, though more or less present throughout whole length of small intestines, are most marked at lower end—one-third of ileum—where the solitary glands are hard, elevated, and congested, and some of Peyer's patches much injected and ecchymosed. Contents of duodenum and upper portions of jejunum: slimy mucus mixed with a very small amount of bile. Jejunum contained colourless and semi-opaque rice fluid, while the lower part of ileum was filled with a pink opaque fluid of creamy consistence, as though some blood had been mixed up with thin boiled ground-rice. *Large intestine*, several patches of dark venous congestion about transverse colon; but no uniform injection was present, and coats had not the swollen, sodden character of those of the small intestines; contents, fluid, chocolate coloured.

CASE 2.—Elizabeth W., aged 19, daughter of above, seized with violent purging and vomiting at 7 P.M., 27th July; cramps supervened; purging and vomiting continued frequent and free; was admitted, with marked symptoms of collapse, at 3 P.M., 28th July; temperature in axilla was then 94⅜°. After admission, girl frequently vomited small quantities, and had several watery, pinkish stools, as of thin mucus mixed with blood; urine was completely suppressed, and girl died in profound collapse, mind remaining clear, and pupils dilated till the last, at 9 A.M., 29th July. Duration of disease, thirty-eight hours. Temperature in axilla rose to 96° an hour before death.

Post-mortem Examination, 11 A.M., same day.—*Heart*, right side very fully distended with dark fluid blood, which soon and firmly coagulated; left cavities contained very small quantity of similar blood; tissue and valves healthy. *Lungs*, not at all collapsed, very buoyant, finely emphysematous; tissue, dry on section; froth very scanty and white; pulmonary artery apparently of normal calibre; weight, right, 9½ oz.; left, 8½ oz. *Liver*, normal; weight 45 oz. *Spleen*, not at all congested; weight 3½ oz.; section of rather paler colour than usual. *Gall-bladder*, full; contains 1¼ oz. of viscid, dark bile. *Kidneys*, pale and anæmic; less blood than usual exudes on section; texture healthy; weight of each, 4¼ oz. *Stomach*, contains three-quarters of a pint of greenish opaque fluid; mucous membrane pale and corrugated, as also is that of the first six inches of duodenum. *Small intestines*, below that point intensely congested, heavy, sodden, and swollen; injection varies in tint from pink, through bright red, to deeper venous colour; general appearance being almost exactly similar to those found in preceding case; most of the mucous membrane is coated with opaque mucus, somewhat granular at places, and mixed with blood where the injection is most marked; the peritoneal coat is tense, pink, and finely injected, giving the surface a finely granular look; no lymph, but surface too dry. Contents of small intestine varies according to region.

somewhat as in Case 1. *Large intestine*, also much congested at places, but less uniformly; urinary bladder quite empty.

CASE 3.—Martha D., aged 33, seized at about 12.30 A.M., the early morning of 3d August, with purging, vomiting, and painful cramps in stomach, which soon affected other parts. Profound collapse was established by 10 A.M., from which the woman never rallied. Mind was clear and pupils large; all the symptoms of the algide state were typically marked. Death took place at 11.30 P.M. same day. Six ounces of warm weak saline solution were injected into vein of right arm, several hours before death, without producing any marked effect beyond some præcordial distress, which soon passed off. Woman died more slowly than had been anticipated; duration twenty-three hours. History of state of bowels previous to attack was uncertain.

Post-mortem appearances.—Lungs, partly collapsed; some old adhesions and obsolete tubercle at upper fifth of both lungs; rest of lungs normal, except that section is too dry; weights, right, 13¾ oz.; left, 14 oz. *Spleen*, small; texture normal; weight, 4 oz. *Liver*, weight, 52 oz.; normal. *Kidneys*, anæmic to eye; section pale; otherwise healthy; weight, 4¾ oz. each. *Stomach*, contains some greenish fluid, and mucous membrane shows some patches of congestion. *Small intestines*, whole extent intensely and almost uniformly congested, heavy, and tumid; injection most marked on mucous surface, but peritoneum also affected; solitary glands are as large as mustard seeds; the intestines contain much flaky mucus coating the surface, and abundant rice-water fluid. Very slight partial congestion of large intestine. *Urinary bladder*, empty. *Gall-bladder*, full of black bile. *Uterus* contains fœtus of from five to six months.

CASE 4.—Henry E., aged 60, was admitted, in moderately developed algide state of cholera, at 4 A.M., August 6. He then had cramps; was cold; lips and nails were blue; and skin was inelastic. From this state the old man rallied and went on well, without a bad symptom, till the night of August 11. On that day, a note taken of his state was to the following effect.—"Has had two natural-formed stools in the last twenty-four hours; tongue, moist, clean; pulse, 72; man has good appetite and sleeps well." He was allowed a mutton diet, but without potato. His urine was passed freely, and had previously been found free from albumen. Unfortunately, the favourable course of this patient was rudely interrupted. A scrubber of the ward listened to his request for further food than was allowed, and she, unknown to the nurse, gave him two good-sized cold and hard potatoes, which the man ate at 8 P.M. of the said 11th August. Between 10 and 11 P.M. the same evening, the man became very uneasy, was violently sick and purged. Collapse of profound and most characteristic choleraic character set in; pupils became dilated. Pulse ceased; cyanosis was developed; skin was again inelastic; and man died at 6.30 A.M. the next morning, August 12, about eight hours from the onset of symptoms, and ten and a-half after what was in all probability a fatal dose of cold potato. At the time of his death, the disastrous act of the scrubber was not known, nor was it confessed till the following post-mortem led to further inquiries being made.

Post-mortem.—Lungs, both decidedly collapsed, so as not nearly to fill the chest; all parts markedly buoyant; colour, dark from pigment; section dry and anæmic; weights, right, 9¼ oz.; left, 10 oz. only. *Liver*, rather small, otherwise healthy; weight, 38¼ oz., not cirrhotic or too fatty; contained fair amount of blood. *Spleen*, very small and anæmic; weight, 2¾ oz. *Kidneys*, anæmic; pale on section; contain less blood than normal; tissue healthy; weight, 3¼ oz. each kidney. *Urinary bladder*, about quarter full of clear urine. *Gall-bladder*, half full of pale bile. *Stomach*, strongly contracted in centre; cardiac end filled with about 4 oz. of hard undigested potato, in lumps of size varying from a bon-nut to a small walnut; mucous membrane congested, of pink colour. *Intestines*, duodenum and upper part of jejunum were filled with fluid of thin gruelly character; the lower part of small intestines contained clear rice-water material; in the cœcum and large intestines some more undigested potato was mixed with a similar fluid; small intestines were congested nearly uniformly through almost their whole length; all the coats were swollen, heavy, and turgid. Although the peritoneum was much and finely injected, the acute congestion of the mucous membrane was most marked, and to nearly its whole surface, much opaque glairy mucus adhered; solitary glands were hard and elevated; some of Peyer's patches were inflamed more and some less than surrounding parts; there was no trace of biliary tint in the intestinal contents.

CASE 5.—Johanna K., ætat. 7. Father lies dead of cholera. Child was seized suddenly without any decided premonitory symptoms, at 4 A.M., August 8, with violent purging and vomiting, followed by cramps and other advanced symptoms of cholera. Was admitted into hospital at 2 P.M. same day, in a state of profound pulseless collapse, evidently moribund. Death took place at 4.30 P.M. Duration of severe symptoms, 12½ hours.

Post-mortem.—*Heart*, right cavities full of soft dark clot. *Lungs*, weights, right, 6 oz.; left, 5 oz.; no collapse; rather less full of blood than normal, but condition of lung generally is healthy. *Liver*, normal; weight, 15 oz. *Spleen*, healthy; weight, 3 oz. *Kidneys*, anæmic; the *two* weigh 3¾ oz.; tissue healthy. *Stomach*, mucous membrane of pale pink colour. *Small intestines*, much injected throughout whole length; coats fleshy and heavy from active congestion; many of Peyer's patches deeply congested and ecchymosed on mucous surface, not extending through to peritoneal surface; solitary glands are large and prominent; much rice-water and gruelly fluid occupied the intestines, which were extensively coated with soft opaque mucus; not a trace of biliary tint in contents of intestines, though the *gall-bladder* was full of dark bile and the biliary ducts readily pervious. *Urinary bladder*, empty; urine was suppressed during life.

CASE 6.—Anna H., ætat. 5½, sent to cholera ward from a house where there had been several fatal cases of cholera. Child was dead on admission, though the distance to the hospital was short, and the ambulance a good one. Corpse had every feature of death having resulted from cholera collapse.

Post-mortem.—*Lungs*, buoyant; finely emphysematous; section dry; froth scanty and white; weights, right, 2¾ oz.; left, 2¼ oz. *Liver*, normal; weight, 11¾ oz. *Gall-bladder*, full of black bile. *Kidneys*, stellate veins or surface fairly full of blood and distinct; no minute congestion of secreting structure, which on section was rather paler than normal; weight of two kidneys, 3½ oz.; no urine in bladder; spleen, normal. *Stomach*, normal, empty. *Intestines*, all coats intensely congested; injection of peritoneum very marked, and its surface rendered sticky by a slimy viscid secretion; mucous membrane of whole small intestine greatly congested, pink and ecchymosed; most of Peyer's patches are more affected than surrounding mucous membrane; intestines contain much rice-water material and opaque white mucus; perfectly free from biliary colouring.

TABLE I.—*Showing the Weights of some of the Viscera of four of the above adult cases, as compared with the normal weights, deduced from Dr Reid's and Mr Hutchinson's Observations.*

	Mary W. Case 1.	Eliz. W. Case 2.	Martha D. Case 3.	Henry E. Case 4.	Normal.	
					Male.	Female.
Lungs, right, .	12¼ oz.	9½ oz.	13¾ oz.[1]	9¼ oz.	24 to 21 oz.	17 to 15 oz.
„ left, .	11¼ „	8½ „	14 „	10 „		
Kidneys, right,	3½ „	4½ „	4¾ „	3½ „	4¼ to 6 oz.	4 to 5½ oz.
„ left, .	3¾ „	4½ „	4¾ „	3½ „		
Spleen, . . .	3½ „	3½ „	4 „	2½ „	5 to 7 oz.	4 to 10 oz.
Liver, . . .	44 „	43 „	52 „	38½ „	48 to 58 oz.	40 to 50 oz.

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[1] Old tubercle in both lungs—pregnancy.

Case 7.—Ann S., aged 32, admitted with cholera, 4 P.M., 1st August. Severer symptoms had lasted twelve hours; marked collapse on admission; pulse 130, barely to be felt; algide symptoms marked; temperature in axilla 94°; marked cyanosis; pupils dilated; some of liquid stools passed had pink, bloody tint. From this state, woman rallied, and gradually improved; temperature rose to normal height in axilla. *4th August*, pulse was 86; skin was natural, and warm; woman had good appetite, and expressed herself as feeling well; passed two green pultaceous stools. Subsequently this patient went back; she passed into a low state, with dry tongue; made a good deal of phosphatic urine, free from albumen; a rash of a mixed, rubeoloid, and urticaria character came out on arm and trunk; muttering delirium supervened, associated with signs of pneumonia. Death occurred 11th August, on the eleventh day of her illness.

Post-mortem.—*Heart*, pale fibrinous clots, interlaced, on both sides of heart, extending to pulmonary artery and aorta, and forming casts of valves. *Lungs*, right, all but quite the apex and anterior margin, solidified by coalescence of lobular pneumonia, some of lobules softening in centre; weight, 35 oz. Left, several small patches of lobular pneumonia, and some hypostatic congestion posteriorly; weight, 18 oz. *Liver*, nutmeg condition very pronounced at places, with much general fatty degeneration; weight, 61 oz. *Spleen*, normal; weight, 5 oz. *Gall-bladder*, full of pale, clear bile, intermingled with opaque, turbid, glairy mucus; lining membrane is markedly congested, granular, and has small flakes of lymph on it. *Kidneys*, pale, and flabby; cortex, full, and opaque; bulges on section; but neither cut surface, nor that from which capsule readily separates, is granular; weight of each, 6¼ oz. *Stomach*, some dull, pink injection at cardial end. (A considerable amount of stimulant was given for thirty-six hours prior to death.) *Intestines*, marked absence of the state of general congestion and turgidity of the coats noted in the former cases, but several patches of local congestion were present, of dark venous colour, at various points of duodenum, jejunum, and ileum. At these spots the mucous membrane was swollen and soft, but not ulcerated, and pultaceous green fæcal matter adhered to them. At two or three points of lower end of ileum, which was healthy, the intestine was contracted upon small portions of formed yellow fæces. One broad patch of purple congestion was present, in transverse colon. Elsewhere, large intestine had healthy appearance. There were yellow fluid fæces in sigmoid flexure and rectum.

Case 8.—Martha S., aged 4½, daughter of above, was admitted same day; suffering from violent rice-water purging and vomiting; eyes were sunken; surface cold; lips and nails blue; child had painful cramps; pulse was small, rapid, and feeble, but could be counted at all times. From this state, child rallied, and regained normal temperature; lost blueness, and rice-water character of stools; but, in spite of treatment, chronic diarrhœa, of fæcal nature, ran on, which exhausted the child, who died on the eighth day of her illness.

Post-mortem.—*Heart*, pale, firm fibrinous clots found on both sides of heart, and extending up pulmonary artery and aorta, forming casts of the valves. *Lungs*, scattered points of lobular pneumonia, of very trifling amount, in both lungs; no massive consolidation; no tubercle; *bronchial glands*, full of yellow tubercle; weights, right lung, 5 oz.; left, 4 oz. *Liver*, normal; weight, 14¼ oz. *Kidneys*, pale, but cortex full, and stellate veins strongly marked; weight of each, 2¼ oz. *Spleen*, normal. *Urinary bladder* contained 3 or 4 oz. of clear urine. *Gall-bladder*, full of pale bile, mixed with glairy, opaque mucus, adhering to congested lining membrane. *Stomach*, normal. *Intestines*, nowhere at all congested; coats, thin, pale, and translucent; scant amount of green, slimy, pultaceous matter in small intestines; yellow fæcal liquid in large.

Case 9.—George B., aged 26, was attacked with cholera, 29th July; vomiting and purging was free. He rallied from collapse stage, but colourless purging continued to end of fourth day; great prostration remained; low delirium set in, at times noisy; urine, containing a trace of albumen, was freely secreted, but retained; left pupil was somewhat dilated; respirations became slow and noisy; low pneumonia came on, and man gradually sank, without having any further diarrhœa, at 2 P.M., 23d August, on the seventh day of his disease.

Post-mortem.—*Head*, much sub-arachnoid fluid; no opacity of membrane, considerable effusion of clear fluid in both lateral ventricles; brain substances of somewhat too pink a tint; no deposit, lymph, or tubercle, anywhere, or any defined softening. *Lungs*, right, considerable lobular pneumonia at posterior base; portions, of size of nut, coalescing at various points, not softening at centre; weight, 30½ oz.; left, *lobular pneumonia*, of less amount, present; smaller masses, and more scattered; weight, 25 oz. *Heart*, firm decolorized clots pass up from both sides of heart in pulmonary artery and aorta, and form casts of valves; valves, etc., healthy. *Liver*, normal; weight, 60 oz. *Gall-bladder*, full of black bile. *Kidneys*, of pale colour; cortex full; convex on section, and too opaque; capsule separates smoothly; no evidence of old disease; weights, right, 6¾ oz.; left, 6 oz. *Stomach*, patches of dull pink injection. *Intestines*, a few patches of congestion noticed on mucous surface, some foot or so above cœcal valve, but not strongly marked; notable absence of the turgid, swollen condition of the coats of the small intestines; duodenum and upper part of jejunum found half-filled with firmish, pultaceous, slimy, green matter; lower end of ileum empty. *Large intestine*, large patches of dark, purple congestion, with swollen condition of mucous membrane, and slight enlargement of solitary glands observed in ascending and transverse colon.

CASE 10.—Mary H., æt. 45, a confirmed drunkard, after one day of moderate diarrhœa, was attacked at 9 P.M., 8th August, with vomiting and more violent purging; severe cramps supervened; collapse set in the next day at about noon, and woman was admitted into hospital at 6 P.M. the same evening, with well-marked symptoms of cholera collapse. Woman rallied very favourably in the succeeding thirty-six hours. A note, taken on 11th August, 10 A.M., states:—"Occasionally vomits a little green matter; keeps down a fair amount of nourishment; voice has returned; pulse, 76, distinct, and of fair power; temperature in axilla, 96°; feet warm; no blueness, or aspect of collapse; tongue moist, and furred; is stated to pass a fair amount of urine, with several fæcal motions; dozes off and on; the pupil of only eye small. Through the succeeding day and night patient got worse again, but there was no return of collapse; pulse remained at 80, feeble; respirations became slow, and sighing; there was restless, active delirium, alternating with snatches of sleep; constant fæcal diarrhœa, and rapid failing of powers; no urine was noticed to have passed. Death took place 8.30 A.M., 12th August.

Post-mortem.—*Lungs*, old pleuritic adhesions, and some obsolete tubercle, with firm cicatrices at both apices; no collapse; right, lower lobe partly becoming solid from coalescence of points of lobular pneumonia; weight, 22½ oz.; left, less of scattered lobular pneumonia at posterior base; tissue friable; weight, 16 oz. *Heart*, visceral and parietal pericardium very loosely glued together over base of heart and large vessel; lymph very soft and aplastic, shading off into a glutinous semi-purulent fluid, of which about ℥vi. were present; large, firm, and pale clots form casts of pulmonary and aortic valves, and occupy cavities of heart. *Liver*, of normal appearance; weight, 46 oz. *Spleen*, healthy. *Kidneys*, fairly full of blood, but not at all deeply congested; capsule tears tissue on being removed; cortex too opaque at places, and bulges on section; other points are firm, and contracted; a few minute cysts on surface; weights, right, 4¾ oz.; left, 5½ oz. *Stomach*, some injection, of pink colour, at cardiac end, but slightly marked; contains green, grumous fluid. *Intestines*, from the outside, the small intestines do not appear to be congested; they are not thick, and fleshy to feel; nor on the mucous surface is the congestion particularly marked, except at two or three points of the ileum; some of Peyer's patches are moderately injected, but most are normal; solitary glands too prominent; the most congested part of canal is the upper, 4 inches below ileo-cœcal valves; parts below healthy; the upper part of small intestines contained much slimy bile-coloured mucoid matter; below, fæces were thin, and yellow. *Gall-bladder* contained dark bile; bladder half-full of clear urine.

Table II.—*Showing Weights of some of the Viscera of the Three Adult Cases who died during the Non-collapse Stage of the Disease, as compared with Normal Standard. This Table may also be compared with Table No. I.*

	Case 7. Ann S.	Case 9. George B.	Case 10. Mary H.	Normal.	
				Male.	Female.
Lungs,[1] right, .	35 oz.	30¼ oz.	22½ oz.	24 to 21 oz.	17 to 15 oz.
„ left, .	18 „	25 „	16 „		
Kidneys, right,	6¼ „	6¾ „	4½ „	4½ to 6 oz.	4 to 5½ oz.
„ left, .	6¼ „	6 „	5½ „ [2]		
Liver, . . .	61 „	60 „	46 „	48 to 58 oz.	40 to 50 oz.
Spleen, . . .	5 „	?	?	5 to 7 oz.	4 to 10 oz.

Table III.—*Comparison of the Weight of Organs of a Child, aged 4½, who died in Non-collapse Stage, with those two others, aged 5½ and 7, who died in Collapse.*

	Non-Collapse.	Collapse.	Collapse.
	Case 8. Martha S., æt. 4½.	Case 6. Anna H. æt. 5½.	Case 5. Johanna K., æt. 7.
Lungs, right, .	5 oz.	2¾ oz.	6 oz.
„ left, .	4 „	2¼ „	5 „
Kidneys, right,	2¼ „	1¾ „	1⅞ „
„ left, .	2¼ „	1¾ „	1⅞ „
Liver, . . .	14½ „	11¾ „	15 „

The study of the post-mortem appearances of the above cases, and the comparative tables appended to them, of the weight of the viscera in relation to the period at which death occurred, and the average healthy weights of the same organs, points unmistakably to a cause of collapse, fulfilling the conditions mentioned above. This cause is intense congestion and inflammation of the whole length of the small intestines, causing them to be fleshy, pink, and heavy, with sticky glutinous matter on the injected, finely granular peritoneal surface in some instances, and with general injection and œdema of the mucous membrane and patches of ecchymosis in *all* of those cases which died in the collapse stage of the disease. This condition is associated, in the same class of cases, with a more or less anæmic state of the lungs, kidneys, and spleen, while the liver maintains about its normal appearance,—a fact probably due to its main supply of blood being derived from the but little contractile vena portæ. During the existence of this condition of the internal organs, we know that before death the superficial arteries and cutaneous veins are contracted and empty of blood, and the skin is shrunken. If this state were produced by a special poison acting on the pulmonary artery, or upon the nerve centres even, which regulate the supply of blood in the arteries of the body generally, how does it happen that the nerves and arteries of the intestines are either exempted from the peculiar influence, or are acted upon in just the reverse manner; the small intestines (and in a less degree the large intestines) being the only portion of the body to which an active determination of blood has occurred? In those cases in which death had taken place after the collapse stage had passed off, although other morbid appearances were found, the condition of the intestines was markedly different; only patches of local congestion were present, as though some portions had remained passively congested, while the diffuse bright injection and turgid swollen condition had entirely or almost completely disappeared.

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[1] More or less pneumonia present in all.—*Vide* cases.

[2] Some old contractile disease present.

The chain of causation appears to be the following:—A poison in the alimentary canal acts there as a direct irritant, causing more or less rapidly-developed congestion and inflammation of the whole small intestine, to which much blood is determined. The intestine, meaning by the term the tissue of the various coats, becomes full and turgid, and acutely œdematous, whereby a strong rapidly-developed impression, resulting in shock, is made upon the innumerable and widely-spread branches of the sympathetic from the solar plexus, by which the duodenum, jejunum, and ileum are supplied. The well-known intimate connexion of the solar plexus with the splanchnic and pneumogastric nerves, and also with the posterior roots of the corresponding spinal nerves, insures the diffuse spread of this impression, amounting to a shock, from which results a general slow contraction of the organic muscular fibres of the whole arterial system, affecting not only the pulmonary artery, but the systemic arteries, including those of the kidneys and spleen, which are found anæmic after death, and also including in all probability the hepatic artery, though from the peculiar nature of the circulation in the liver the effects there are less manifest.[1] Before this view can be received, there are several propositions to which we must on good grounds assent.

I. *That there is an inflammation of the intestines.*—We are so accustomed to associate the presence of inflammation with a hot febrile state of skin that the cold stage of cholera is likely to throw us off our guard. The algide state so rapidly supervenes in most cases that scarce any come under proper observations in hospitals soon enough to admit of the temperature in the axilla being taken. In but one case have I had an opportunity of forming an opinion as to whether the temperature of the skin was raised at quite the commencement of cholera, and I regret that I did not then bring the matter to the test of a thermometer. It was that of a night nurse on duty in the cholera ward of the London Fever Hospital. She was seized at 2 A.M. with violent purging and vomiting. Coming myself direct from a warm bed at 3 A.M., the temperature of her skin was felt by me to be decidedly above the normal. I feel confidence in asserting this, as I have had much experience in taking body temperatures, and have been accustomed to verify judgments based on sensation by appeal to the thermometer. With the above exception, evidence of the temperature of the skin at the earliest stage of cholera is absent.

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[1] The ductus communis cholidochus, in all probability, is included within this contractile influence, and thereby is explained the absence of bile from the intestines during the continuance of collapse.

During the algide stage the phenomena of the disease, the scant supply of blood to the skin through the arteries, etc., partly account for the coldness of the surface; but, just as by the use of the thermometer, Dr Ringer established that the temperature of the blood was considerably raised even during the cold stage of the ague, so other observers, by taking the temperature within the vagina or rectum of patients in the collapse of cholera, have been able to bring abundant proof that even at that period, while the heat of the axilla only marks 95°, in those orifices it mounts to 101° to 103° F.

To illustrate this point I give in a tabular form the results of several thermometric observations made by Mr Charles E. Squarey, of the London Fever Hospital, simultaneously in the axilla and rectum or vagina of two patients, husband and wife, who died from the effects of progressive choleraic collapse. They corroborate observations made in the course of the epidemic of 1848.

Temperature in axilla,	......98°	96⅖°	96⅘°	96⅕°	98°	96⅗°
Do. vagina,	...101⅘	103⅘	102⅘	101⅘	101⅗	100⅗
Temperature in axilla,	......97°	97⅗°	96⅘°	98⅘°	98⅕°	
Do rectum,	...100	102⅗	103⅕	101⅕	100	

In all probability, the elevation of temperature of the surface of the body, found after death in some cholera corpses, may be accounted for by the conduction outwards of the heat of the interior, aided by the passage of hot blood from the internal large arteries through the relaxed small arteries and capillaries of the surface after death. This may also account for the muscular movements of some cholera corpses.

The following observations, made by Mr Squarey and myself on the body of a man aged sixty-seven, who died in cholera collapse, show that if at the time of death there is no marked difference between the internal and external temperatures, the elevation of temperature of skin is very trifling after death:—

Time.	Axilla.	Rectum.	Remarks.
3 P.M.	96°	98⅗°	
3.20	95⅗	98⅕	Time of death.
3.30	96	97⅘	Muscular movements observed of moderate extent. Hand moved towards face.
3.40	95⅘	97⅗	
3.50	95⅘	97⅗	
4	95⅗	97⅗	
4.10	95⅗	97	
4.20	95	96⅘	
4.30	95	96⅗	
		Interior of abdomen.	
4.40	95	98	
4.50	94⅗	98	
6		96⅗	After removal of body to dead house.

Further observations are required on this point.

The evidences of inflammation of the intestines, derived from post-mortem appearances, are very strong. The swollen condition, the intense hyperæmia and inflammatory œdema, resulting in some points in ecchymosis; the tenacious and granular mucus, sometimes tinged with blood, which coats the mucous membrane; the presence of false membrane and ulceration, which have occasionally been recorded; the admixture of altered epithelium and exudation cells; all these conditions found after death in the collapse stage, most surely show that the intestine was acutely inflamed during life. If they do not indicate this, we must abandonconclusions based on similar evidence concerning other diseases admittedly inflammatory.

The character of the rice-water stools is also markedly in accordance with what is known to be the peculiar qualities of inflammatory exudations, containing, as they do, a large proportion of chlorides of sodium and phosphates. Mr Simon, in his article on "Inflammation," in the "System of Surgery," p. 27, vol. i., says—"The great characteristic of inflammatory effusions is their excess of chloride of sodium and of phosphates." The well-known disappearance of the chlorides from the urine during the exudation stage of pneumonia indicates that their abundant effusion is, if not peculiar to, yet distinctly connected with the exudation from inflamed tissues. I have frequently had opportunities of testing the thin discharges from the visibly inflamed nasal mucous membrane of scarlatina patients, and have always found the fluid loaded with chlorides. From the above considerations I consider we are warranted in assenting to the proposition, that there *is* an inflammation of the intestines.

II. *That symptoms referable to this inflamed state of the intestine precede those associated with collapse,*—is the next proposition to which we must agree.

The testimony of writers on cholera is unanimous on this point. A peculiar sinking feeling—at first not amounting to a pain, yet very distressing, referred to the epigastrium—followed by painful cramps of the intestines, violent sickness and purging, the products of inflammation being found in the stools, are in the vast majority of instances present for a time, varying from one to several hours prior to the onset of collapse symptoms. The above group of symptoms clearly point to the intestines being the seat of the disease, and taken in connexion with the post-mortem appearances, the conclusion that such is the case is irresistible. Even in those cases in which death has rapidly resulted from collapse, before any external rice-water purging has been established, it is clearly stated that the intestines have contained the peculiar product, and have themselves shown the morbid appearances which, for reasons given above, must be considered as resulting from inflammation. There is no case on record that I can find, however rapidly fatal, in which conclusive evidence of an affection of the intestines, in accordance with the descriptions given above, was not present whenever looked for. Intimately allied, as an evidence of causation, with this question of priority of the inflamed condition of the intestine to the onset of collapse, is that of the abatement of the symptoms referable to any acute inflammatory action in the bowels, as the collapse passes off, and when reaction is established. Although some sickness, diarrhœa, and unpleasant sensations, which have the intestines for their seat, remain, still the intensity of all these symptoms is then greatly mitigated, and their character altered. Moreover, even when death occurs, if it take place after, even shortly after, the collapse has passed off, from secondary affections, the post-mortem appearances indubitably show that the severity of the inflammation of the small intestines has gone by, as evidenced by the coats having returned to their normal thickness, the general injection and inflammatory œdema having passed off, a few patches of localized congestion of a darker character, and showing signs of less activity, alone remaining. In support of this statement, I would refer to the post-mortem examinations of Cases 7, 8, 9, and 10, which died in the non-collapse state, especially to Case 10, Mary H., who died very shortly after the reaction from collapse had been effected. It is not, however, entirely on the evidence of those few cases, that I rely, but I will quote a few lines of the resumé, in the College of Physicians' Report on Cholera, on the state of the small intestines after death in the stage of reaction. "The mucous membrane of the small intestine was generally pale or only slightly hyperæmic, and the pulpy œdematous condition of the tissue and intestinal glands, occurring in the algide stage, had much diminished or entirely disappeared." This quotation is important, in that by implication it confirms my experience of the post-mortem appearances found in those cases which died in the collapse stage.

III. *That the inflamed condition of the small intestines, and the morbid impression emanating from them, made upon the ganglionic and sympathetic system of nerves, is a* SUFFICIENT *cause of collapse, in accordance with the known laws of the physiology of the human body,*—is the remaining proposition to be considered.

To establish the great probability of the sufficiency of the cause, we must review as many as nearly as possible parallel cases as we can find, in which shock to the system, radiating from the alimentary canal and abdominal viscera, has induced collapse coinciding in many of the leading symptoms with that seen in cholera. I am well aware, before starting on the inquiry, that no exact parallel is to be obtained, for were it to be found it would be cholera. A general strong similarity is all that we require—all, in fact, that could advance the argument. Exactness of the parallel would leave us in consideration of a barren identity.

Although the nerves supplying the large intestine are not derived from the solar plexus, and have not such intimate connexions and sympathies with the great ganglionic nerve centres supplying the heart, lungs, and arterial systems, as those distributed to the small intestines, I am of opinion that the following quotation from the

"Treatise on the Practice of Medicine," by Dr George Wood,—in which, when treating of dysentery, he thus describes the symptoms associated with extensive inflammation of the large intestines,—shows that there is an instructive analogy between the symptoms of some severe cases of dysentery and of cholera. The quotation runs thus: "Occasionally, in cases of some severity, the vital forces sink temporarily under the violence of the impression made upon the nervous system. The patient experiences an indescribable painful feeling of hollowness or sinking in the abdomen, attended with cold damp skin, feeble and almost thread-like pulse, and sometimes nausea and vomiting. Sometimes, however, from the extent and severity of the inflammation, symptoms of depression appear at the outset, and the system never fairly reacts. Here the same condition appears to exist continuously which has been above described as occurring occasionally in milder cases. The nervous system yields to the violence of the disease. The patient has throughout a very small and frequent feeble pulse, a pale, cool, and clammy skin, anxious and sunken features, and a somewhat livid and purplish appearance under the eyes, about the lips, and at the roots of the nails; while, at the same time, there is extraordinary violence of the local symptoms—such cases prove fatal in a few days." It is, however, among the symptoms produced by the action of irritant poisons, whether mineral, animal, or vegetable, upon the alimentary canal, that one would expect to find the closest parallel. Inquiry in this direction will give us some remarkable analogies. Thus Dr Guy, in his "Forensic Medicine," p. 390–1, has the following remarks on the effects of arsenic: "When the poison proves rapidly fatal, death commonly takes place by collapse or coma. . . . . There is a cold and clammy skin, extreme prostration of strength, the pulse very frequent and almost imperceptible. . . . . The mind, as in most cases of poisoning by arsenic, is unimpaired, but there is some approach to coma, slight cramps and convulsions, and death without reaction. Sometimes this state of collapse is accompanied by constant vomiting, and profuse purging. In this class of cases, death often takes place in four or five hours, and it is rarely delayed beyond twenty hours." Farther on, after detailing the post-mortem appearances of inflammation found in the stomach in cases of poisoning by arsenic, Dr Guy remarks, "The inflammation generally extends to the duodenum and commencement of the other small intestines, and occasionally affects the whole length of the alimentary canal, being most conspicuous in the lower bowel." While considering this subject of the analogies of cholera, my attention was directed to the very interesting work on "Cholera in its Home," by Dr Macpherson,[1] in which several instances are so graphically given, that I cannot do better than quote them in the language of his book. "The following is an abstract of the symptoms of poisoning by tartar emetic.[2]—Copious vomitings; frequent hiccup; burning heat in the epigastric region; colic; copious stools; syncope; small accelerated pulse; cold skin, but sometimes intense heat; difficult breathing; vertigo; fainting; convulsive motions; very painful cramps in legs; prostration of strength; and death." Dr Sandbusch thus describes the symptoms resulting from eating putrid flesh:[1] "Violent thirst; nausea and vomiting; abdomen at times spasmodically tense, at others, soft; constipation, or oftener diarrhœa; strangury, almost amounting to retention; difficulty of swallowing, and of respiration; headache, or swimming of the head; blueness of the face; dilatation of the pupils; small weak pulse; numbness of points of fingers; coldness of extremities; and marked sinking of the vital powers. In case of recovery the collapse and characteristic symptoms often suddenly cease." I will quote one further instance from the same author:—"An example of a vegetable irritant is afforded in the effects produced by croton oil. At the end of three-quarters of an hour after the oil had been swallowed the skin was cold and covered with sweat, the pulse and action of the heart scarcely perceptible, respiration difficult, the points of the fingers and toes, the parts around the eyes and lips blue, as in malignant cholera; but no vomiting. In an hour and a-half there were excessive and involuntary alvine discharges, sensation of burning at œsophagus, skin colder, respiration and circulation difficult, the cyanosis extended over the whole body, the skin became insensible, and death occurred with symptoms of asphyxia four hours after the poison was swallowed. In the latter case of a vegetable purgative, the symptoms approached wonderfully close to those of cholera." I have not been able to meet with any description of the post-mortem appearances found after croton-oil poisoning. To determine this point to some extent, I gave a poisonous dose of the oil to a dog, which caused violent vomiting and scanty bloody stools, attended with considerable depression. Before giving the poison, the temperature in the rectum was 102°. Three hours afterwards the temperature had fallen to 98½°. The animal was *killed* twelve hours after the oil was given. The sole morbid lesions discoverable were intense congestion of the stomach, which was empty, and of dark port-wine tint. The small intestines were much less affected, but presented a pinker tint, and some of the Peyer's patches were more congested than those of a healthy dog with which they were compared. They contained only a small amount of colourless fluid. The large intestine presented just the appearance, throughout its whole length, as that mentioned as found in the stomach, and contained glairy bloody mucus of the same character as the stools prior to death.

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[1] Late Deputy-Inspector-General of Hospitals, H. M. Bengal Army.

[2] From Beck's Medical Jurisprudence, 1838.

In connexion with all the foregoing cases, the remark of Caspar,[2] in his Forensic Medicine, "that the phenomena attendant on many kinds of poisoning resemble those of Asiatic cholera," is worthy of attention; and, taking all the above cases into account, I am of opinion that, at least, a case of the greatest probability is made out of the *sufficiency* of the inflamed state of the intestines to account for the development of the algide symptoms of cholera, in accordance with the line of causation mentioned in a former paragraph.

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[1] Allegemeines Repertorium, 1846.

[2] Sydenham Society's Translation, by G. W. Balfour, M.D., vol. ii. p. 67.

I believe that the foregoing arguments establish, as nearly as the question admits of anything like proof, the chain of causation of cholera collapse; and I believe it to be in accord with all the phenomena of the disease, and the facts of pathology as far as yet known. There are two or three further points to be considered, which all tend to confirm the views I have stated. The view, held by some, that the phenomena of collapse and the contracted state of the arterial system are due to the continued action of a sui-generis poison, in the blood, upon the nervous centres, must be considered. This proposition is maintained by the strongest advocates of so-called eliminative treatment; yet it is a matter of the widest experience that, setting aside exceptional cases, profuse rice-water diarrhœa and frequent free vomiting have been followed by most profound collapse, just at the period when it would be presumed that some at least of the poison had been eliminated. In reply to this, it would be answered that the poison is a ferment which increases itself in the blood; and in those cases where collapse follows free purgation and vomiting, it results from the poison multiplying faster than the elimination gets rid of it. Now, this mode of behaviour of the cholera poison rests on pure assumption, and though mere assumptions are useful as a tentative method of explanation, they must give way if opposed to facts which support another explanation, itself based on the ascertained facts of the disease. In illustration of this point, I would draw attention to those instructive cases in which a distinct relapse of cholera collapse has been evidently brought on by definite and gross errors of diet, committed at a time when the alimentary canal must have been left in a weakened state, although all evident constitutional effects of the poison had passed off. Two cases of cholera relapse, and both of this kind, have come under my notice. One was that of a young woman who was admitted into St Bartholomew's Hospital, under the care of Dr Andrew, suffering from profound cholera collapse. From that state she rallied, and went on without a bad symptom for some days, when, on the day before that on which she was to have left the hospital, her friends (?) brought her some bad indigestible pastry, of which she ate largely. Collapse of considerable urgency, and as characteristic of cholera as her original algide state, supervened, from which she again rallied, after castor oil had expelled the offending matters, together with considerable amount of rice-water matter. The other case was that given at page 526, Case 4., Henry E., and is well worthy of attention. Till the unfortunate meal of two hard cold potatoes, the man was well in all his bodily functions, as far as they could be investigated. The rapid development of vomiting, diarrhœa (rice-water), and collapse; the post-mortem evidence of lumps of potato in an inflamed cardiac end of stomach; the fact that portions of the same irritant had passed indigested through the whole length of the small intestines, which were themselves intensely congested, œdematous, pink, and heavy, and contained large quantities of rice-water material; all these facts point to the potato being the cause of renewed intestinal inflammation, from which resulted the development of the algide state, which proved so quickly fatal. That bad pastry and hard lumps of potato should irritate and excite inflammation in an intestine rendered liable to assume a peculiar form of affection, can be readily understood, while it can hardly be conceived that either one or the other should increase the amount of the cholera poison in the blood.

I have in this paper purposely abstained from giving any prominence to the treatment of the cases above recorded, because I have not pursued quite the same method with all, and no useful end could be served by stating the treatment, unless one could give a tabular statement of very large numbers. I would, though, make one or two observations on the use of the drugs castor oil and opium, which seem to bear closely on the conclusions at which I have arrived. If the sketch given of the pathology of cholera and the mode of causation of collapse be correct, it tends to establish that castor oil is contra-indicated, except as an aperient to remove undigested material from the alimentary canal at the commencement of the premonitory diarrhœa, or even later in the case, should the presumption of undigested matters in the intestines be strong; but then it should be borne in mind that the castor oil, irritant as it is—though a mild one—stands in the position of the lesser of two evils. After collapse has passed off, in certain cases castor oil is again indicated to remove the very peculiar slimy and pultaceous green matter which accummulates in the duodenum and jejunum, and must be supposed, from its abnormal character and consistence, to require removal. As to the use of opium, the beneficial influence of this drug, which has so many and diverse authorities in its favour, and which is recommended by the College of Physicians in all stages of cholera short of established collapse, may be explained in accordance with the views I have stated. It is *the* drug always given to protect the system from shock, or lessen its effects when it has been sustained. Opium circulating in the blood seems to induce a state of the nervous centres, the very opposite of what must be their condition in the collapse of cholera, if we may take the striking contrast, presented by the symptoms associated with the development of that state and those of advancing opium poisoning, as an indication for such a conclusion. This, I think, we may fairly do. It is, though, but little use theorizing on the subject of treatment. Such a process may, with advantage, suggest lines of treatment, but their success must be established by very wide and impartial collation of a large number of assorted cases.

ARTICLE V.—*Historical Sketch of the Edinburgh Anatomical School.* By JOHN STRUTHERS, M.D., F.R.C.S. Edin.; Professor of Anatomy in the University of Aberdeen; late Lecturer on Anatomy, Edinburgh.

(*Concluded from page* 457.)

GORDON.

IT is due only to the shortness of his career that the name of Dr John Gordon is less known than that of any of the anatomists already noticed. When death overtook him, ten years after he began to teach anatomy, he had already made a reputation as an anatomist, and was one of the best teachers, and most valuable men in the Edinburgh school. We may see from Gordon's career, which was finished at the age of 32, what Barclay lost by not having begun till his 37th year; and on the other hand, from Barclay's career, what Gordon's name would have been had he been spared to a long life. But Gordon has had one advantage over the other anatomists of Edinburgh—in that his life has been fully written,[1] perhaps even too tediously, although the Memoir, by his friend Daniel Ellis the botanist, is quite a small and a modest book compared with some of the biographies of our time.

Before he studied medicine, Gordon had all the advantages of education which the grammar school of Forres, his native place, and two years at the University of Edinburgh, could give. Nor did he want friends in Edinburgh, where his brother Robert was a Writer to the Signet, and where, above all, he was the apprentice and favourite pupil of Dr John Thomson. On taking his degree as Doctor of Medicine at the University, in 1805, feeling no desire to carry out the family plan that he should enter the medical service of the East India Company, he took Dr Thomson's advice to begin as a teacher of anatomy in Edinburgh. He spent three years in preparation, the first in London, in James Wilson's school of anatomy in Windmill Street. He also attended lectures on comparative anatomy by Dr Macartney, who afterwards removed to Dublin. The next two years he spent in Edinburgh, during each of which he gave some anatomical demonstrations to a small number, by way of experiment.

He became a Fellow of this College in October 1808, in his 22d year, three years after his graduation, and now commenced formally to teach anatomy. Although young, he was already master of his subject, both practically and from careful study of the great works of the continental anatomists. These he tested by his own observation of nature, so as to form for himself a complete system of anatomy and physiology in their most modern aspect. He was noted for the care which he bestowed in the preparation of his lectures, for the neatness of the dissections with which he illustrated them, and for the attention which he gave to minute structure. At first he taught anatomy and physiology together in the same course, lecturing once a-day, but after, I understand, the first two years, he gave a separate course of physiology, generally in winter in the evening, sometimes in summer. Gordon was a most accomplished lecturer. There is abundant evidence of this in the Memoir, and I learn from several who attended his lectures that there is no over-estimate in this. Dr William Henderson of Aberdeen, a good judge, who was Gordon's apprentice during his first four years as a teacher, speaks of Gordon and his lectures in the highest terms. Dr Gairdner, who attended Gordon's lectures both on anatomy and physiology, writes to me, that he was "minute in such things as the internal ear, and in his descriptions of the kidney, liver, testis, and other organs. He never uttered a jest and never travelled from his subject even for an instant. His manner, appearance, style of language, his dissections, and his matter were all of them admirable. He was, in fact, or at least in my judgment, a model lecturer both on anatomy and physiology."

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[1] Memoir of the Life and Writings of John Gordon, M.D., F.R.S.E., late Lecturer on Anatomy and Physiology in Edinburgh. By Daniel Ellis, F.R.S.E. Edinburgh, 1823. Pp. 238, 12mo.

Gordon's class was good, but not so large as he deserved, probably never exceeding 100, Barclay's greater standing and name carrying the larger class. Gordon began eleven years after Barclay, and died six years before Barclay retired. There was considerable, but quite friendly, rivalry between them. Gordon lectured next door to Barclay, in No. 9 Surgeons' Square, the detached house at the west end of old Surgeons' Hall, to reach which the pupils had to pass the door of Barclay's class-room. Professor Macdonald of St Andrews, who attended Gordon during several of his later years, informs me that Gordon's dissecting room, which was below the lecture room, was well supplied. He recollects at the commencement of his anatomical studies, the pupils who intended to enter to the practical class being asked to meet in another room, in which they found six subjects ready to be begun. It was understood that they had been obtained from London.

Gordon was the author of several important essays and works. The following is a list of his publications.

1808. On Dislocations of the Thigh Bone.
1812. The article "Dumb and Deaf" in the Edinburgh Encyclopædia,—in which he treats at considerable length the subject of Speech, physiologically considered.
1815. A System of Human Anatomy. Vol. I.
1817. Observations on the Structure of the Brain, comprising an Estimate of the Claims of Drs Gall and Spurzheim, to Discovery in the Anatomy of that Organ.
1817. Outlines of Lectures on Human Physiology.
1818. Engravings of the Skeleton of the Human body.

The first volume of his System of Human Anatomy comprised only two of the eight parts of which the work was to consist. The part containing the skeleton was ready in manuscript when he died, and he is understood to have left valuable manuscripts in anatomy and physiology. His work on the Brain arose out of a controversy with Dr Spurzheim, who had, in 1815, given some lectures in Edinburgh on Gall's system of Phrenology, to which Gordon replied. The controversy was not so much the question of the truth or fallacy of Gall's system, as whether Gall and Spurzheim's account of the anatomy of the brain was, as they claimed, original, or, so far as correct, borrowed without acknowledgment especially from the Dutch anatomist Reil. Gordon's familiarity with the works of the continental anatomists made his victory an easy one. The discussion excited much interest in Edinburgh, and his work on the brain made his reputation as an anatomist in London and in Paris.

At first Gordon gave his whole time to anatomy. He looked to science and teaching both for reputation and livelihood, trusting that if he required to practice he could turn his reputation to account in that direction. After six years, feeling that his duty to his family required him to take practice, he applied for and received the appointment of assistant-surgeon to the Royal Infirmary, and before his death, four years thereafter, he had already, young as he was, obtained a considerable share of good practice. He died on 14th June 1818, after fourteen days' illness, with various obscure symptoms, which I have heard were attributed by some to fever, but which appear to have arisen from some affection of the brain. The unusual expressions of regret which his death called forth, in London as well as in Edinburgh, bring out forcibly the respect in which he was held both as a teacher and as a man, and the hopes which were entertained of his still higher distinction. With high intellectual ability, learning, and general accomplishment, his unassuming manner and entire simplicity of character, gained him universal esteem.[1] It is impossible to think of Gordon's brief career without ranking him high both as an anatomist and as a man, and without feeling that, in his early death, the Edinburgh school lost one who would have taken his place among its foremost men.

INNES.

Although Innes and Fyfe did not conduct schools of their own, they were well-known as demonstrators for many years in Monro's class, and by their anatomical publications.[2]

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[1] The well-known engraving of Gordon hardly does him justice. The late Sheriff Gordon of Edinburgh was his son, and we can see the resemblance, but the father had a slender figure, with fair complexion and light hair.

[2] I find that I am to some extent in error as to John Bell being the first who taught anatomy out of the University. I had overlooked the fact that there was an earlier Dr John Aitken, who gave instruction in anatomy as well as in several other departments of medical study. In the "Notice of the Professional Life of John Walker, F.R.C.S.Ed., by Mr W. Brown, F.R.C.S.," 1851,

John Innes was born at Callart, in the Scottish Highlands, some miles from Fort-William.[1] By his ability and application he made up for deficient opportunities of early education, and soon showed so much proficiency in anatomical knowledge, and address in minute dissection, that he was selected by Monro to be his assistant before he had attained his eighteenth year. He was demonstrator in Monro's class for nearly twenty years. As he died in January

the following reference to Aitken's teaching occurs. Walker having gone, at the age of 21, to study for a year in London, writes to his father in Edinburgh, in 1787,—"Mr Cruickshank's lectures are little better than the demonstrations of Aitken. Monro is as far superior in style and phraseology as you can well imagine any two things." This John Aitken entered as Fellow of the College in 1770. His first publication, 1771, is entitled "Essays on Several Important Subjects in Surgery. Illustrated with copperplates, by John Aitken, surgeon, of the College and Incorporation of Surgeons in Edinburgh," and is dedicated to Monro. In his next publication, 1782, entitled "Elements of the Theory and Practice of Physic and Surgery," two vols., he is styled also M.D., one of the Surgeons to the Royal Infirmary, and Lecturer on the Practice of Physic, and on Anatomy, Surgery, and Chemistry. In his "Principles of Midwifery," which reached a third edition in 1786, dedicated to the Duchess of Buccleuch, he is styled "Lecturer on Anatomy, Surgery, and Midwifery;" and it is dated from the "Edinburgh Anatomical Theatre, March 1, 1786." "Lecturer on Anatomy, Surgery, and Midwifery," occurs also on the title-page of his anatomical books, which are also dated from the "Edinburgh Anatomical Theatre, 1st November 1786," and have a portrait of the author prefixed. They are "Principles of Anatomy and Physiology," 2 vols.; and "A System of Anatomical Tables with Explanations." The latter is only the text of the first volume of the former with the engravings of both volumes. The artist's name is not mentioned. The engravings represent all the systems of the body, and must have been a laborious and expensive undertaking. He says, in his preface, that he has "delivered twenty-four public courses of lectures on these sciences" (Anatomy and Physiology). The statement in Chambers' Scottish Biography (article, Barclay, p. 139),—"Dr John Aitken, a member of the Corporation of Surgeons, also gave a course of anatomy. He published engravings of the bones, muscles, etc., accompanied with tables. He was well attended, and he was generally esteemed a good lecturer,"—is evidently intended to apply to this John Aitken. The much later John Aitkin, M.D., who assisted Dr Barclay, andafterwards lectured on anatomy, entered as a Fellow of this College in 1817 (his brother, Thomas Johnston Aitkin, M.D. in 1826). The name of the early John Aitken is sometimes printed Aiken, and is liable to be mistaken for that of John Aikin (also sometimes printed Aiken) the English surgeon who wrote several medical, surgical, and other books, from 1770 to 1795.

As Aitken taught, or professed, what was represented in the University, at the time, by at least four separate courses (Practice of Physic, Anatomy and Surgery, Chemistry, and Midwifery), it is difficult to look on him but as a kind of grinder, with classes meeting at what he styles the "Edinburgh Anatomical Theatre," where he could also give demonstrations,—rather than as entitled to take rank as a scientific lecturer, or as a teacher of one department more than another. After beginning with some lectures on midwifery, John Bell taught only anatomy and surgery, which always went together. Notwithstanding Aitken having given instruction in anatomy, among other things, it is, therefore, doubtful how far it would be correct to say that John Bell was not, properly speaking, the first extra-mural lecturer on anatomy.

[1] There is a notice of Innes, at the time of his death, in the Medical Commentaries,—vol. iv. p. 232.

1777, he must have commenced as demonstrator just when the second Monro commenced to discharge his professorial duties. After filling the office for about ten years, he began, at the solicitation of the students, to give an evening course of lectures, or demonstrations, in which he displayed much facility and clearness in description. These evening lectures were well attended, the last course which he gave by nearly 200 students.

In 1776, Innes published a little treatise on the muscles, of which a second edition was published by Monro in 1778.[1] Towards the close of 1776 he published eight engravings of the bones and muscles, after Albinus, to which he added explanations. His zeal in the discharge of his anatomical duties appears to have hastened the affection of the lungs with which he had been threatened for some time and which at length cut him off, at about the age of 38. Mr Innes appears to have been a good anatomist and teacher, and much liked and respected as a man.

FYFE.

Andrew Fyfe was selected by Monro to succeed Innes as his "dissector" (the term then used) in 1777. The intimation of this appointment occurs in the Medical Commentaries, vol. iv. p. 242. It is added that "About two years ago, the annual prize-medal, given by the commissioners for improvements in Scotland, for the best drawing in the academy which they have established at Edinburgh, was adjudged to him." He continued as assistant to the second and third Monros, superintending the dissections and giving demonstrations, for a period of about forty years. He was a most painstaking teacher, but his flurried manner and hesitating delivery in the lecture room, the result of incurable diffidence, interfered much with his efficiency there. Sir Astley Cooper, who had attended in 1787-8, thus refers to him:[2]—"Fyfe I attended, and learned much from him. He was a horrid lecturer, but an industrious worthy man, and good practical anatomist. His lecture was, 'I say—eh, eh, eh, gentlemen; eh, eh, eh, gentlemen—I say,' etc.; whilst the tallow from a naked candle he held in his hand ran over the back of it and over his clothes;—but his drawings and depictions were well made and very useful." Mr Bransby Cooper who attended in 1815-16, says,[3] "Mr Fyfe was a tall thin man, and one of the most ungainly lecturers I ever knew. He had been assistant to Dr Monro, and by hard study, and dissecting for the doctor's lectures, became an excellent anatomist. Sir Astley used to mimic very admirably the awkward style of delivery and primitive habits which distinguished Mr Fyfe in the lecture-room, even when he was in Edinburgh, and invariably excited much laughter."

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[1] In the Medical Commentaries, vol. ii. p. 437, 1774, there is an account by Innes of a case of "Præternatural Conformation of the Organs of Generation."

[2] Life of Sir Astley Cooper. By Bransby B. Cooper. Vol. i. 172.

[3] Ibid., p. 166.

Fyfe was a great writer of text-books. It is no simple matter to follow their various editions and transformations through the catalogues of the medical libraries. The following is a list of his publications, as accurate as I am able to give:—

1800–1826. "Compendium of Anatomy." Passed through nine editions, and grew from 2 vols. 12mo, to 4 vols. 8vo. The ninth edition bears the printer's date 1826, after Fyfe's death. The 4th vol. of the "Compendium" is devoted to Comparative Anatomy. The Human Anatomy is arranged nearly after the manner of the course of lectures delivered by the late Dr Monro.

1800–1820. "System of Anatomy." 3 vols. 4to. Passed through four editions. The first edition of this work also, was called "Compendium." This work is chiefly composed of the plates and the explanatory references. The first edition contains 160 tables (4to plates) and nearly 700 figures. The fourth edition contains "upwards of 200 tables, taken partly from the most celebrated authors and partly from nature." Many of the plates are coloured.

1813–1823. "Outlines of Comparative Anatomy," 8vo; afterwards, in 1823, "A Compendium of Comparative Anatomy."

1818. On Crural Hernia."

1830. "Plates to illustrate the Anatomy of the Human Body." 158 plates 4to; and, also in 1830, an accompanying 8vo vol., "Description of Anatomical Plates." These are posthumous re-issues of the plates and explanations of his "System of Anatomy."

The large number of students in Monro's class in Fyfe's time, would create a considerable local demand for the text books, and thus, and by his presence among the students as their practical teacher, Fyfe's name was, in his day, a well known one in the Edinburgh school. He certainly worked hard and long as a practical teacher, and the drawing and engraving for his anatomical plates must have been a laborious undertaking, and, apart from much originality, one of considerable merit. He died in March 1824, aged sixty-five.[1] His son, Andrew, became known as lecturer on chemistry in Edinburgh, and afterwards as professor of chemistry in the University of Aberdeen.

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[1] I am in some uncertainty as to Fyfe's teaching during his latter years. Some years before his death, which took place in 1824, he is said to have left Monro, and to have taught a class of his own, his lecture-room being somewhere in the Horse Wynd. Others who knew these times well, tell me that they were not aware of Fyfe having taught anatomy out of the University. My colleague Professor Macrobin informs me that he knew the Fyfe family well before as well as after he began to study medicine, that he is quite certain that Fyfe taught anatomy for some time in the Horse Wynd, and that, some time before his death, he had given up teaching, but still worked at his text-books and engravings. His name appears as entering to the Fellowship of the College of Surgeons 23d October 1818, a few weeks before the entry of his son Andrew Fyfe, M.D. This was just after Gordon's death, and may have been with a view to his instructions being recognised by the College. On the other hand, his books continue to the last to be dated from the "College" (University). The ninth edition of the "Compendium," bearing the printer's date 1826, is dated, "College, October 1, 1823." The 7th edition, 1819, bears on the title page "Teacher of Anatomy," "and many years Assistant in the anatomical theatre, University of Edinburgh;" while the 4th edition, 1820, of

ALEXANDER WALKER.

Alexander Walker is better known as an author than as a lecturer. He published the following works:—

1834. "Physiognomy founded on Physiology, and applied to various Countries, Professions and Individuals. Illustrated by Engravings."

1834. "The Nervous System, Anatomical and Physiological. In which the Functions of the various parts of the Brain are for the first time assigned; and to which is prefixed some account of the author's earliest discoveries, of which the more recent doctrine of Bell, Majendie, etc., is shown to be at once a plagiarism, an inversion, and a blunder, associated with useless experiments, which they have neither understood nor explained."

1836. Beauty illustrated by an Analysis and Classification of Beauty in Woman, with a critical view of the hypotheses of Hume, Hogarth, Burke, Knight, Alison, etc. Illustrated by drawings from life by Henry Howard."

1838. "Intermarriage; or the Mode in which and the causes why Beauty, Health, and Intellect result from certain unions. Illustrated with Drawings."

1839. "Documents and Dates of Modern Discoveries in the Nervous System."

1840. "Woman Physiologically considered as to Mind, Morals, Marriage," etc.

1841. "Pathology founded on the Natural System of Anatomy and Physiology."

Mr Walker was born 20th December 1779. He had worked at anatomy with Dr Barclay, and at the age of twenty went to London, where he continued his anatomical pursuits. Returning to Edinburgh about 1808, he gave lectures in the Lyceum and elsewhere, which were numerously attended by students and medical practitioners. He also gave lectures in the Assembly Rooms, to mixed audiences, "On general and particular science." I am uncertain how far his lectures in Edinburgh were regular courses or special and fragmentary. He attracted considerable notice by instructing the students as to the mode of cutting down on arteries, for which he gave exact mathematical directions. In London he had had to leave the school in consequence of showing the students, after lecture, that Abernethy, instead of tying the subclavian artery, had put the ligature round the neighbouring nerve-trunk. What position he had occupied at St Bartholomew's, or in Abernethy's class, I am unaware, but the incident of the nerve being tied instead of the artery (on the dead subject), and Mr Walker's giving offence and having to leave there, in consequence of pointing it out, I have on good authority.

his "System" bears "Teacher of Anatomy," "Many years Assistant to the Professor of Anatomy, and still Conservator to the Museum of the University, Edinburgh." This agrees with the statement that he for some time taught a class of his own, and explains how his books are at the same time dated from the University. As to Fyfe teaching anatomy in the Horse Wynd, my friend Professor Macdonald informs me that he recollects distinctly both of the fact and the failure. Not succeeding, he had probably given up teaching, and confined himself to working at his text-books and engravings. The above quotation from Mr B. Cooper would seem to imply that Fyfe had left Monro by 1815-16. Curiously enough, although Fyfe died in 1824, the presentation copies of his posthumous books, bearing the printer's date 1830, in both the College of Surgeons and Medical Society's Libraries, are, as my friend Dr Sanders informs me, inscribed "from the author."

After a few years he returned to London, where his career was mostly literary. He was connected with several newspapers, was an active founder of the "Literary Gazette," and published the contributions to science and art above enumerated. He had not, so far as I am aware, graduated, or desired to graduate, in medicine or surgery, although he worked at anatomy. He returned to Edinburgh in 1842, in weak health, and died Dec. 6, 1852 in his seventy-third year.

There is considerable merit and originality in some of Mr Walker's views, especially in regard to the cerebellum. I saw him often in his later years, when he resided in the neighbourhood of Leith, and was under the friendly professional care of my brother Dr James Struthers. Although his faculties had become considerably impaired, he was able to converse regarding his views on the nervous system, and still maintained to me that Bell was wrong, that the posterior root is the motor, and the anterior the sensory root. Tracing the connexion between the cerebellum and the posterior column of the spinal cord, he inferred, from the views he held regarding the cerebellum, that the posterior root of the spinal nerve must be motor, leaving the sensory function to the anterior root. His claims to priority in the idea of the two roots having distinct functions are fully discussed in his work on the Nervous System.

CRAIGIE.

It is perhaps not generally known that the late Dr David Craigie taught anatomy for several years.[1] Born of parents in humble life, in North Leith, Craigie maintained and educated himself by his own exertions in private teaching, and took his degree at the University of Edinburgh in 1816. He began to teach anatomy in 1818, on the death of Dr Gordon; not in Gordon's class-room, however, but in No. 3 on the opposite side of Surgeons' Square, which had been before occupied for anatomical purposes by a Mr Smith, an obscure and unsteady person, who had endeavoured to teach anatomy. Dr Craigie continued to give regular courses of anatomy for at least four years. His lectures were not numerously attended, and he became occupied in work as a physician, and in connexion with the Edinburgh Medical and Surgical Journal, of which he afterwards became, and long continued, sole editor. In 1832 he was appointed Inspector of Anatomy for Scotland under the Anatomy Act, and held the office for several years. Dr Craigie's reputation is well known as a successful teacher and author in pathological anatomy and in practice of medicine. He is the author also of the article "Anatomy" in the seventh and eighth editions of the Encyclopædia Britannica. He died on 17th May 1866, in his seventy-third year, having been born 6th June 1793. In this Journal for August 1866 will be found a good notice of the life of this most learned and estimable physician, except the facts in regard to his teaching anatomy. These I obtained from himself in a conversation which I had with him a few weeks before his death.

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[1] I understand that Dr Abercrombie at one time thought of teaching anatomy. He gave a lecture for Dr Barclay once, but never tried it again.

Cullen.

As Dr Barclay's career was drawing to a close, William Cullen (grand-nephew of the great William Cullen) began to lecture on anatomy. He entered as a Fellow of this College on 1st August 1822.[1] He began in John Bell's old lecture-room in Surgeons' Square, and removed to the medical school in the "Society," Brown Square, where he taught during his last three years. He had a class of about a hundred students or upwards, to whom he lectured once a-day—a good class, considering that he was one of four lecturers, Aitkin, John Lizars, and Knox, besides Monro, being now in the field. Cullen was a highly educated man, and an eloquent lecturer. He is said to have prepared his lectures carefully. All agree in speaking of him as an excellent and successful lecturer. His probationary essay in 1822 was on Bronchotomy, a a subject on which he afterwards wrote two papers.[2] He was one of the surgeons to the Royal Infirmary, but it was physic, not surgery, to which he looked forward. He gave some special lectures on the stethoscope, then new in Edinburgh, which were attended by teachers as well as by students. His last session was 1827-8, so that he had taught anatomy only for about five years. He died suddenly in July 1828. He was liable to epileptic attacks, and was found dead sitting in his study chair.[1]

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[1] I have been unable to ascertain the exact year in which Cullen commenced to teach anatomy, but it was probably in 1823-4. During the autumn of 1822 he was in Paris with the view of adding to the museum of the College. "Cullen's proposal to go to Paris is minuted 23d, and dated 22d June 1822, from 22 Howe Street. There had been a prior proposal, for which the College voted a large sum, to buy the museum of Professor Meckel of Hallé. This, which failed, appears to have suggested to Cullen what he proposes in his letter, 'to make or purchase specimens where they are most likely to occur.' He seems to contemplate preparations illustrative of disease, of accident, and of parturition, fœtal development, and the diseases incident to that department, distortions, etc.; and he thinks that £500 a-year would, in three or four years, accomplish his object on the most liberal scale, as by an arrangement with the two Governments, all needless custom-house charges could be remitted. He asks £300 in full of all demands, except transit to and from Paris. The motion approving the plan was carried on 25th June. On 23d October he wrote from Paris explaining his partial failure from unexpected impediments which might make it ultimately necessary to solicit his recall. On 29th January (1823) he again wrote to the President, from Howe Street, giving an account of his partial success, and a vote of fifty guineas (with thanks), in addition to previous advances, follows on 11th March. In the annual accounts for 1823 occurs—'Expenses of Mr Cullen's mission to Paris, and sum voted by College to him, £197, 13s. 11d.'" (MS. from Dr Gairdner.) The preceding shows how fully the College appreciated the importance of having a good museum, and that Cullen was enthusiastic in science. His name appears in the College Records 11th November 1824, in the discussion on the propriety of enforcing a course of practical anatomy. I have been informed that he might have succeeded to Dr Barclay's school, but did not offer sufficient terms. Dr Knox, with greater penetration, told the friends who negotiated the matter for him, not to hesitate about terms.

[2] "Case of Cynanche Laryngea, in which the operation of Bronchotomy was successfully performed."—(Edin. Med. and Surg. Journal, vol. xxviii., 1827, p. 79); and "On the Causes of the Fatal Termination of certain Cases of Bronchotomy."—(*Ibid.*, vol. xxix., January 1828, p. 75.) He had written an essay

KNOX.

The period between the end of Dr Barclay's time and the retirement of the third Monro in 1846—twenty years—was one of much interest in the Edinburgh Anatomical School. Lecturers on anatomy multiplied and succeeded in attracting classes with comparative ease. It was a period not only of the anatomical, but of the whole medical school, which cannot be understood apart from the consideration of the state of anatomical teaching under the third Monro. The numerous students of the University had to resort to the lecturers for anatomical instruction, and this greatly supported the lecturers on other departments of the curriculum. The University matriculation list had, at the end of the first ten years, diminished to below 700, and during the next ten years went down until, in Monro's last year, the number was only 330, after which it began to recover. This diminution was, as already indicated, partly the inevitable result of the institution of other schools, but was largely owing to the cause above mentioned. Of this I could give abundant illustration, were it necessary or agreeable. Some of the anatomical teachers of this period, like Barclay, devoted themselves to anatomy, some, like John Bell, taught it with, or with a view to, surgery; and the Edinburgh school of that period, besides producing its own anatomists and surgeons of the present day, has furnished professors of anatomy to all the Universities of Scotland, and anatomists or surgeons to some of the London schools.

The chief among the lecturers of this period, I need hardly say, was Dr Robert Knox, the direct successor of Barclay, who taught

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on Bronchotomy while a member of the Students' Medical Society at St Bartholomew's Hospital in 1820. A paper by Cullen and Robert Carswell, on Melanosis, was read at the Edin. Med.-Chir. Soc., 7th May 1823, and was published in the Society's Transactions, 1824, vol. i. p. 264.

[1] For most of my information regarding Cullen I am indebted to my colleague Dr Macrobin, who dissected with Cullen during his last year in Surgeons' Square, and then attended his lectures and became his class-prosector in Brown Square. Cullen's attention being a good deal taken up with other matters he was sometimes not forthcoming at the lecture hour, the prosector receiving a note of apology just before the hour. This happened so often that the prosector's entry before the class to make the apology was understood, and received with a round of the usual Edinburgh "ruffing," and with "Come away, come away; what is the excuse to be to-day?"

anatomy in Edinburgh for sixteen years,[1] the attractiveness of whose lectures was so great that his class attained a number unprecedented even in Edinburgh. Before he had lectured four or five years, his class was larger than that of the second Monro had ever been. Dr Knox introduced a new aspect of anatomy. The characteristics of the Edinburgh Anatomical School had varied in the different periods with the science of the time or with the characters of the men, who, though successors or rivals, were far from being copies of each other. The first Monro was not so much either kind of anatomist, as all kinds in a primitive time. The second Monro was a descriptive anatomist in a more minute age, and his comparative anatomy was either special or, like Hunter's, physiological. John Bell originated the school of surgical anatomy. Charles Bell was the teleological, and especially the artistic anatomist. Barclay set the example of making the teaching of anatomy an occupation; his anatomy was descriptive and classic, and his comparative anatomy, though chiefly descriptive, was scientific enough to enable him to see and teach the outlines of homology. Gordon, again, was the physiological and minute anatomist, not only of the organs but of the tissues, as far as the instruments of the day could carry him. Fyfe was the plodding practical demonstrator and text-book maker, the provider of daily common anatomical food. Knox, lastly, was the morphological anatomist. Building on the comparative anatomy of his predecessor, and familiar with the work of the then brilliant French school, with the descriptions and inductions of Cuvier, and the then despised philosophy of Geoffroy St Hilaire, Dr Knox was able to invest human anatomy with a new interest. His forte as an anatomist was, not in detail or the relation to surgery and medicine, but in bringing comparative anatomy to the explanation of human anatomy. I have heard men who have since risen to eminence say with enthusiasm, that in Knox's lectures they were not only taught but stimulated. In the lecture-room the ridicule which he cast on the errors, and too often on the men, of the time, did not on the whole help him. It was to his having early mastered and appreciated the great facts and ideas of morphology, together with—as we may see by his writings—his wonderful command of the most powerful and felicitous language, that Dr Knox's lectures owed their value and their attractiveness.

As the farther notice of this period would lead me to speak of living men, and of events which are fresh in the memory of many, the time has not nearly come for making it the subject of a historical sketch. When the history of this period is written it will have to include a notice of an event important to this country as well as to the Edinburgh medical school, the passing of the Anatomy Act in 1830, and of the events which led the legislature to see that it was for the public interest to legalize dissection. At some future time I hope to be able to resume this sketch so as to include this period.

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[1] Dr Knox also formed a considerable Museum, which is now in my possession.

SEPARATION OF PHYSIOLOGY AND SURGERY FROM THE COURSES OF ANATOMY.

I have thought that the following notice of the separation of physiology and surgery from the anatomical courses in the Edinburgh school, might prove interesting, both on account of the facts, and as showing more fully the nature of the work which fell to the anatomical teacher in the times of which I have spoken. I have obtained the facts from the former regulations of this College, and of the University, from the records of this College, and from some other sources, which will be referred to.

The inquirer here is liable to fall into error in going back on the old regulations, if he looks only at the list of classes in the curriculum, and does not consider the rules applying to the teachers. We see physiology and surgery in the curriculum half a century ago,[1] but the fact is, that these lectures were not only given, or allowed to be given, by the same teacher, but were not even separate courses. It was not till this College refused to recognise any teacher for more than one branch of the curriculum, that the courses were necessarily separate in Edinburgh. They might or might not, and generally they were not; for all the systematic teachers of whom I have spoken taught, or were understood to teach, at least surgery as well as anatomy.

The first check was applied in 1829, when this College passed a rule refusing to recognise a teacher for *more than two* departments.

> 18th June 1829.—On the recommendation of a committee, the College enacted "That no Professor or Lecturer shall be recognised who shall teach more than two of the branches of education recognised by this College." To take effect immediately. A motion that Anatomy and Practical Anatomy, and Chemistry and Practical Chemistry, be considered respectively one branch, was lost. But on 11th July this exception, as applied to Anatomy, was carried by a large majority; and on 15th July the same advantage was extended to the teacher of Chemistry and Practical Chemistry.

It was, however, still allowable to teach either physiology or surgery, or any other branch along with anatomy, till 1838, when the College refused to recognise any teacher for more than one branch.[2]

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[1] The candidate for the Diploma "must have attended lectures on Anatomy, Chemistry, Institutions of Medicine, Practice of Medicine, Principles and Practice of Surgery, Clinical Surgery, Midwifery, Materia Medica." Regulations R.C.S. Ed. 1809. Edin. Med. and Surg. Journal, vol. v.

[2] This was to take effect after 1st May 1839. The lectures of no Professor or Lecturer to be recognised who lectures on more than *one* of the branches of the curriculum "during the same session." Nor would any teacher of a branch of the curriculum be recognised if he lectured also on a branch not included in

It was different in the Universities, where the professor is necessarily restricted to the department for which he is appointed; and within which we can, therefore, at once discover the time of the separation by referring to the date of the institution of the respective chairs. Keeping these considerations in view as enabling us to determine when the separation became compulsory, we have now also to see how the separation had more or less taken place voluntarily on the part of the teachers.

Separation of Physiology.—In a sense, the separation of physiology took place first. In Scotland, the course of "Institutes of Medicine" has always been understood to embrace physiology, although the undefinable character of the title has rendered the course a variable one, according to the attainments and predilections of the teacher. Now, this chair and class have existed in the University since 1726, six years after Monro was appointed professor of anatomy; so that in the University, and so far, physiology has, since the formal commencement of its medical school in 1726, been taught separately from anatomy. So far as I am aware, John Allen was the first, out of the University, to give a separate course of physiology, beginning in 1794, and continuing to do so for five years, when (in 1799-1800) he left for London, afterwards joining Lord Holland.[1]

After an interval of about ten years, Gordon, as we have seen, began to give courses of physiology separate from his courses of

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the curriculum, medical or general, unless he had obtained special leave from the College. As exceptions to the new law, the following might be taught by the same teacher,—Anatomy and Practical Anatomy; Chemistry and Practical Chemistry; Practice of Medicine and Clinical Medicine; Practice of Surgery and Clinical Surgery; Mathematics and Natural Philosophy; and "for the present" Clinical Medicine and Clinical Surgery were allowed to be taught by any physician or surgeon attached to a recognised hospital although he might also be a teacher of some other branch of the curriculum. None of these exceptions have since been rescinded, and the College has ceased to look upon the last as temporary or undesirable.

[1] Allen "was the very first of our private lecturers; physiology being his favourite department. I have heard Dr John Gordon, a judge on such a matter of the highest authority, say that Allen's single lecture on the circulation of the blood contained as much truth and view as could be extracted by an intelligent reader from all the books in Europe on that subject." (Lord Cockburn's Memorials of his Time, p. 177.) For notices of this most able man, see also, Lord Brougham's "Statesmen of the Time of George III.," Knight's ed., vi., 175; the biographical sketch, by Major-General Fox and Sir J. Gibson Craig, prefixed to the 1849 edition of Allen's "Inquiry into the Rise and Growth of the Royal Prerogative in England;" in the biographical notice of Dr John Thomson in Life of Cullen, vol. ii.; and in Dr Murray's Annals of Colinton, the parish in which Allen was born in 1771. "He was a stout, strong man, with a very large head, a broad face, enormous round silver spectacles before a pair of peculiarly bright and intelligent eyes, and with the thickest legs I ever remember. His accent Scotch; his manner eager but extremely good-natured." He was "the most liberal of men towards others of all opinions, provided he deemed them honest in their profession of them. Violent often in language, and uttering the most terrific expressions towards those he believed to be either hypocrites, or cruel, or bigoted, he was in acts and deeds most gentle and kind-hearted." (Fox, pp. 19-23.)

anatomy.[1] Afterwards there were other lecturers on physiology, but it was not until made compulsory by this College in 1838, that it was necessarily a formal course in the school, separate from anatomy, or that the anatomical course became more distinctly anatomical. It was not, I may add, till about ten years ago that the London College of Surgeons required its candidates, following their studies in Scotland, to attend a course of physiology distinct from and in addition to two courses of anatomy, instead of the three courses of anatomy, (or so-called "anatomy and physiology," as the tickets of the anatomical teachers bore,) previously required. This change, however, was to us merely a nominal one, as we had long before ceased even to endeavour to give physiology proper in the anatomical course, the law of this College in 1838 having virtually completed the separation in the Edinburgh School.

Two circumstances tended to keep physiology chiefly in the hands of the anatomical teachers. One, that the course of "Institutes of Medicine" has generally been regarded from the physician's rather than from the anatomical point of view;[2] the other that (besides the natural alliance, so long as it was possible to overtake both in one course) teachers of anatomy have been more able by their position to devote themselves to science, and were consequently, with a few exceptions, the chief representatives of physiology also. It is not uncommon still to hear regret expressed at this separation, the alliance seems so natural. No doubt a certain kind and amount of physiology must always come in with anatomy. But physiology is now so great and important a science, with ramifications beyond the anatomical; and anatomy has recently been so greatly extended, especially in the directions of homology and histology; that the separation has become inevitable, each being more than enough to occupy the undivided attention of its teacher.

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[1] According to his biographer (p. 108), Gordon "announced his intention of giving, during the summer of 1813, a separate course of lectures on physiology, which had now become his favourite study, and to which he devoted himself with great ardour;" and it is added that "of the eight courses which he subsequently delivered, generally in the winter season, and occasionally in summer, each surpassed that which preceded it in interest, and in the reputation which it brought to its author." This is no doubt correct so far, but Gordon must have given at least separate winter courses of physiology before this, as Dr Gairdner and Dr Henderson, who both (as already referred to) began with Gordon in 1808, and were done with him before 1813, inform me that they distinctly recollect his giving courses of physiology separate from anatomy. Dr Henderson thinks that he did so in both the third and fourth of the four years during which he attended Gordon's lectures. If he delivered eight courses after 1813, he must, in at least two years, have lectured on physiology both in the winter and summer sessions.

[2] The professors of the "Institutes of Medicine" in the University of Edinburgh during the time of which I have treated in this sketch were John Innes, Whytt, Cullen, Drummond, James Gregory, Andrew Duncan senior, Andrew Duncan junior, and Alison. Whytt, it need hardly be said, has left a permanent name in physiology. (See Memoir of the Life and Writings of Whytt, by William Seller, M.D.; Trans. Roy. Soc. Edin. 1862.)

Separation of Surgery.—The history of the separation of surgery from the anatomical course is different. The chair of Surgery in the University was not established till 1831, more than a century after the chair of the Institutes of Medicine was founded. This was chiefly owing to the persistent and successful opposition of the second Monro, who claimed to be professor of surgery as well as anatomy, and thus prevented surgery from being taught in the University as it deserved, while it was being taught at this College as a separate course. It has been commonly believed that the first separate course of surgery in Edinburgh was by Dr John Thomson, who began to lecture on surgery in 1801.[1] The records of this College, however, show that, so far back as 1772, Mr James Rae had begun to teach surgery, as a distinct course.

27th August 1772. A committee appointed relative to a proposal of Mr James Rae to give a course of lectures, reported favourably, and authorized Mr Rae's lectures to be advertised, as follows:—"The College of Surgeons being desirous to promote any useful undertaking towards the advancement of the knowledge of surgery, have taken into their consideration a plan of lectures on the whole art of surgery, also practical discourses on the cases of importance as they occur in the Royal Infirmary, given for several years past at their Hall, by Mr James Rae, surgeon in Edinburgh, and one of the members of the Society. As the course is founded on the practice of the hospital, and delivered by a person who has been in the habit of constant observation, they recommend it as useful and necessary to the students of physic and surgery, and to render this course more extensively useful, the Society are resolved to communicate to him such cases of importance as may occur in their practice."

Four years after this came the proposal to institute a chair of surgery in the University.

23d October 1776. Of this date occurs a letter from Mr Rae suggesting to the surgeons to "frame an application" to the Crown to establish "a professorship of surgery in the University of Edinburgh as necessary and useful towards perfecting the students of medicine and surgery in this branch of their education." From the tenor of this application it appears that Mr Rae's clinical surgical instruction had been favourably received by the managers of the hospital, and warmly supported by the surgeons. It also appears that Dr Monro had heard of the proposal for a professorship, and got his brethren of the University in a faculty meeting, to give their opinion "of the inutility of such a profession, as he teaches all that students could learn from it." Mr Rae requests the support of the surgeons on the ground that the proposal does not interfere with Dr Monro, "and will be of advantage to the students in matters which he does not teach or profess."

A committee appointed to consider the proposal, reported, on 30th October, that "it must be obvious to every unprejudiced person that two such extensive and important branches as anatomy and surgery must be more completely taught by two persons properly qualified for each branch than that both should be taught by one," etc. Report signed by Alexander Hamilton (the President), John Balfour, Robert Walker, Thomas Hay, and William Chalmers.

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[1] In a letter written in September 1803, Dr Thomson mentions his "having been employed for three years in teaching surgery, and his having given during that time, two courses of clinical lectures in the Royal Infirmary, and two courses of lectures on the principles and practice of surgery, in a private theatre." (Loc. cit., p. 19.) His biographer goes on to say, "At the time when Dr Thomson began to lecture on surgery, no separate or distinct course on that subject was delivered in Edinburgh, either in the University or by any private teacher. Surgery was taught only as an appendage to anatomy; and the result was, that a few lectures, hurriedly introduced at the close of the anatomical course, long formed the only instructions in surgery given in the city." (P. 39.)

1st May 1777. A petition to the Crown framed by the above-mentioned committee was agreed to. It concludes with—"May it therefore please your Majesty to create a Professor of Surgery in this University, and to grant that your Royal nomination shall be in favour of one of the members of the College of Surgeons of Edinburgh; and if your Majesty shall be graciously pleased to grant our request, permit us humbly to recommend Mr James Rae to fill that chair."

21st May 1777. There was laid before the Surgeons an answer from the Lord Advocate to the effect "that it is not in his power to interfere in behalf of this application, as he had many months since received a letter from the Principal and medical Professors of the University requesting that, if an application should be made for the creation of a professorship of surgery in Edinburgh, he would represent to his Majesty's ministers that, in the opinion of the University, and particularly of the medical part, the creation of such a professorship was useless, and would be very improper."[1]

It was this which led Monro, on 16th July 1777, to apply to the Town Council for a new commission expressing that he is professor of surgery as well as of anatomy.[2]

This long and successful opposition by Monro to the establishment of a chair of surgery explains two important events in the Edinburgh school—one, the institution, in 1803, of a chair of Clinical Surgery; the other, in 1804, the institution of a chair of Surgery by the College of Surgeons, and the appointment thereto of Dr John Thomson, a step which Monro exerted himself in vain to prevent. This chair the College suppressed, when its object was accomplished by the institution of the chair of surgery in the University in 1831. The chair of Military Surgery in the University was instituted in 1806, and Dr Thomson at the same time appointed to it. He continued, however, to deliver his lectures on surgery up to 1821. His course was numerously attended. One writer mentions that in 1815-16 as many as 250 to 280 attended the course.[3] Surgery was meanwhile very variously taught; by some little more than nominally along with anatomy, in some cases by the anatomical teacher but in a separate course, and by some who taught surgery only.[4]

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[1] I am indebted to Dr Gairdner for the above abstracts and extracts from the Surgeons' Records.

[2] In his petition (Dalzel, ii. 450) he refers to his father having, "in imitation of the practice of Leyden, then taught, and from that time continued to teach yearly anatomy and surgery in one connected course of demonstrations and lectures, and was universally considered as Professor of both branches"—that he "continued to adopt the general plan pursued by his father, comprehending surgery with anatomy; that the teaching of surgery has been understood to belong to his office, yet the commission granted to him and his father as joint-professors of anatomy, makes no mention of surgery, probably resulting from the supposition that it was comprehended under that of anatomy. Craves a new commission expressly bearing him to be Professor of Medicine, and Anatomy and Surgery. Granted."

[3] Loc. cit., p. 42.

[4] Barclay and Gordon both styled themselves "Lecturer on Anatomy and

The University meanwhile was without a chair of Surgery. But in 1831, Monro having been dead for fourteen years, the matter appeared in a different light, and there was no one now to call in question either the utility or propriety of establishing a chair of surgery. The courses of anatomy and surgery were now necessarily separate in the University; but it was not till 1839-40 that they became necessarily so in Edinburgh, as it was not till 1838 that this College passed its regulation refusing, after 1st May 1839, to recognise any teacher for more than one branch.

Attendance on Anatomy.—The amount of attendance on anatomy was, from time to time, increased as these changes took place. Previous to 1824 attendance on a course of lectures alone was required. It is interesting now to look back on the position of matters when it was first proposed to make practical anatomy imperative. The proposal was first made at a meeting of the College, on 2d October 1824; and the reasons assigned were, that a course of dissections are required both by the London College of Surgeons and the Navy Board as a necessary part of a complete surgical education. When the motion came up for discussion, on 11th November, William Cullen, the anatomist, moved as an amendment, "That a committee of three members be appointed to collect information as to the probability of a sufficient number of subjects for dissection been obtained, so as to enable the College to judge of the prudence of making this enactment. The amendment was lost, and the original motion carried, "That a course of dissection or practical anatomy, of not less than three months' duration, shall be added to the course of study now required of candidates for the diploma. This law to take effect as to candidates at or subsequent to March 1826." This was a bold step to take in Edinburgh, with probably over 900

Surgery," and to some extent taught surgery in the anatomical course. In the earlier years of the register of this College, beginning 1826-27, Monro's pupils register two distinct tickets, one for "Anatomy, Physiology, Pathology, and Surgery," the other for "Principles and Practice of Surgery;" and in the announcements of the University classes about this time Monro appears as teaching "Anatomy and Pathology" at 1 P.M., and "Principles and Practice of Surgery" at 4 P.M. I understand that Monro's lectures on surgery, at 4 o'clock, were delivered irregularly, and did not form a complete or satisfactory course. Cullen's tickets are registered as "Anatomy and Physiology," and "Practical Anatomy;" Knox's, "Anatomy Physiology and Pathology," "Practical Anatomy and Operative Surgery," and "Comparative Anatomy;" John Lizars', "Anatomy and Physiology," "Practical Anatomy," and "Pathology and Surgery." The latter was, I believe, a separate course of lectures. John Aitkin, "Anatomy Surgery and Physiology," and "Practical Anatomy;' Liston, "Principles and Practice and Operations of Surgery;" Allan, the same, these being courses of surgery only. Too much reliance is not to be placed on the titles used by the various lecturers at this time. It was only after this, in 1829, that a lecturer was restricted to even two subjects. The above courses were essentially either courses of anatomy on the one hand, or surgery on the other.

students in the school.[1] It was a duty to medical education; but Cullen, as an anatomical teacher, saw the hazard to the school. The University passed a similar regulation in the following year.[2] It was no doubt these enactments, by the pressure they occasioned in an overcrowded school, which led on to the events which brought about the Anatomy Act of 1830.[3]

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[1] 850 was the number in 1824–25 on the University matriculation list. In 1825–26, it was 932.

[2] Practical Anatomy was, however, not absolutely imperative in the University till 1833, being between 1825 and 1833 among the five subjects *two* of which, at the option of the student, were required to be attended. The five were—Clinical Surgery, Medical Jurisprudence, Natural History, Military Surgery, Practical Anatomy.

[3] The impossibility of obtaining a sufficient supply for dissection in a school so overcrowded, accounts for the numerous engravings which were issued by the Edinburgh anatomists. Innes appears to have been the first to publish anatomical engravings in Edinburgh. The beautiful engravings accompanying the folio edition of Monro's work on the Bones, were not published in Edinburgh, but in Paris, in 1759, by M. Sue, professor of anatomy in Paris, and also professor of anatomy to the Royal Academy of Painting and Sculpture. Innes' example, in 1776, was followed both by anatomists and engravers. As Innes' plates were but reduced copies from Albinus, and the execution not very artistic, Mr Andrew Bell, a professional engraver, appears to have come into the field to supply the latter defect. In the Medical Commentaries, from vol. iv. (1777) to vol. xv., and in the Annals of Medicine, vol. iii. (1798), occur numerous notices of the gradual appearance of these engravings by Andrew Bell, under the various designations of Bell's edition of the Plates of Albinus, Anatomical Engravings, and Anatomia Britannica. In 1786 appeared John Aitken's Engravings, which, he informs us, are "either copied from nature, or selected from the works of the first anatomists." In 1794 came John Bell's Engravings of the Bones, Muscles, and Joints, drawn and engraved by himself; followed, in 1801 and 1802, by Charles Bell's Engravings of the Arteries, Nerves, and Brain, the drawings by himself, the engraving by various artists. Fyfe's engravings were announced in 1798 (Annals of Medicine, vol. iii. 469) as about to appear. They appeared in 1800, first in his "System of Anatomy, in three quarto volumes, containing 160 plates and about 700 figures. They are mostly reduced copies from the engravings of the continental anatomists, but some are from his own dissections; the engraving was mostly executed by himself. Fyfe's engravings increased in subsequent editions, and were published, up to 1830, in various forms. In 1818 appeared Dr Gordon's "Engravings of the Skeleton of the Human Body." From 1823 to 1826 appeared the "System of Anatomical Plates," 5 vols. folio, and "Explanation of the Plates," 5 vols. 8vo, by John Lizars. From 1819 to 1834 appeared Mitchell's Engravings, under the superintendence of Dr Barclay and Dr Knox. The first part was entitled, "A series of engravings representing the bones of the human skeleton, with the skeletons of some of the lower animals. By Edward Mitchell, engraver. The Explanatory References by John Barclay, M.D.," etc., Edin. 1819. The second edition, in 1824, has the same title. It was Mitchell's own idea to publish engravings for the use of students, and he had begun to copy the plates of Domenico de Rossi, Rome, 1696, and of Albinus; but, on consulting Dr Barclay, he advised him to give up Rossi for those which Sue had published to illustrate the French edition of Monro on the Bones. They are accordingly copied from Sue and Albinus, with the addition of some original views of the skeleton of the lower animals. The third edition, in 1829, has Dr Knox's name added. Mitchell's series of engravings went on, and were commonly known as Knox's Plates. The Nerves appeared in 1829; the Arteries in 1831; the Muscles in 1832; the Ligaments in 1834. They are all beautifully executed copies, in quarto, of the engravin

It is interesting to notice the comparative attendance on the courses of lectures and of practical anatomy at this time. I am able to give this from the register of this College, the first few years of which (beginning 1826-7) I have had occasion to consult. In 1826-7, of 669 pupils on the winter register, there are, attending the anatomy course (*i. e.* lectures on anatomy), 470; practical anatomy, 262, and of the latter only 75 are not also at any course of lectures on anatomy. In 1827-8, of 722 pupils registered in winter, there are attending the anatomy course 558; practical anatomy 296, and of the latter only 73 are not also attending lectures on anatomy. In contrast with this, in the anatomy classes of recent times the number attending the practical class is the greater, in the proportion of about three to two; the practical anatomy course being attended generally during three years, the anatomy course during two.[1]

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of Albinus, Haller, Camper, Scarpa, Sömmerring, Walther, Cloquet, and Tiedemann. The muscles are, as announced on the title page, "carefully copied from the folio plates of Jules Cloquet." The Arteries are reduced from those of Tiedemann, "engraved by E. Mitchell, under the superintendence of Thomas Wharton Jones, Surgeon. The Explanatory References, translated from the original Latin, with additional notes, by Dr Knox." In the preface to the latter, Dr Knox mentions that his object in introducing engravings was that they might be used in the dissecting room, "to be laid on the dissecting table as a guide to your dissections;" and he says that "the experiment was eminently successful; and it was easy to observe that, by the use of such delineations and descriptions in the practical rooms, the general character of the dissections shortly became altogether different. This we can readily understand, especially in these days of little superintendence and teaching in the dissecting room; and good plates of regional anatomy may still be of considerable use in this way; but the chief explanation of the issue of these numerous books of engravings by the former anatomists in Edinburgh, mostly copies of previous publications, was no doubt that the enormous number of students made the supply for dissection comparatively scanty, and drove them to the use of pictures instead.

[1] I may give the numbers registered as attending the respective teachers of anatomy during the above two years:—

1826-7.	Anatomy.	Practical Anatomy.	Of the latter, at Practical Anatomy only.
J. Aitken	36	26	3
Cullen	45	36	18
Knox	207	90	17
J. Lizars	104	96	35
Monro	78	14	2
	470	262	75
1827-8.			
Aitken	47	17	0
Cullen	37	30	11
Knox	247	115	22
Lizars	138	109	30
Monro	88	25	10
	557	296	73

These numbers give probably a fair enough proportionate view of the attendance

In 1828 two courses of Anatomy appear in the curriculum of this College, the courses to be of "at least five months' duration," and "to consist of at least five lectures weekly." In 1829, six months Practical Anatomy, instead of three months, were required.[1]

Some may be surprised to learn that certificates of attendance were now for the first time required. Previous to 1826–7 the presentation of the class tickets appears to have been all that was required. In 1826–7 the College opened a Register in which, during the first month, or two months, of the session, all students who intended to present themselves as candidates for the diploma of the College were required to enter their "name, from whence, classes, and teachers." This, however, was evidence only of entry, not of attendance on the courses. The first requirement as to evidence of attendance which I can find relates to dissection, in the 1828 regulations.

> "Every candidate shall in addition to the certificate of entry to a course of Practical Anatomy from the register of the College, produce to the President a certificate from a Professor or Teacher of Anatomy recognised by the College, that he has been actually engaged in the dissection of the human body, under the personal superintendence of the said Professor or Teacher, during the course."

On 18th June 1829 the College enacted that "the candidate shall be required, in addition to the tickets or proof of entry to the different classes, to produce *certificates* of his having attended these classes, from the respective Professors or Lecturers." The difficulty now arose as to what evidence of attendance the teacher should require before certifying. There appears to have been, in some quarters, considerable laxity on this score, so that the College required again to interfere.

> *13th October* 1831. "Dr Robertson moved that a letter should be sent to the different Lecturers, recommending to them the propriety of their regularly calling a roll," etc. The Motion, after discussion, was "modified so as simply to convey to the Lecturers the opinion of the College that it appeared to them

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on the respective teachers, as well as a correct view of the relative numbers attending the Anatomy and Practical Anatomy classes; but they do not show nearly the total attendance on each teacher, as this register does not contain the names of nearly all the students. (See Note, p. 450, in our last Number.)

[1] This was a year of great changes. It was the year in which teachers were restricted to not more than two departments. The curriculum for the diploma of the College was extended in several departments. A second course of Surgery was added; a three months' course of Practical Chemistry, and a six months' course of Clinical Medicine, were introduced; the courses of Clinical Surgery and Practical Anatomy were extended from three to six months, and Hospital attendance from twelve to eighteen months. Medical Jurisprudence and Botany was not yet in the curriculum, but, together with Natural History, Comparative Anatomy, and Pathological Anatomy, were "strongly recommended." As expressed also in the 1828 regulations, "the six months' courses" are "understood to consist of five lectures per week for a period of not less than five months."

expedient that the most efficient means in their power should be adopted to insure the regular attendance of students."

Towards the end of 1836, there are reports that certificates of attendance had been given to students who had not attended these classes. A committee was accordingly appointed to confer with the lecturers. This committee reported to the College, on 29th November 1836, unanimously in favour of a roll-call of students, 20 times in a six months, and 10 times in a three months course, and that the certificates of lecturers should be according to a proposed formula. "I hereby certify, that Mr ——— attended my lectures on ——— commencing on ——— and terminating on ——— that the roll of the class was called ——— times during the session, and that Mr ——— was present on ——— of these occasions."

This rule and formula have been since acted on, the number of roll-calls having been increased to 25 in a six months', and 12 in a three months' course. The student must re-attend the course if his certificate bears that he has been absent on more than 8 of these occasions in a six months' course, or on more than 4 in a three months' course. If on more than 6 in a six months' course, or more than 3 in a three months' course, the College secretary is required to intimate the irregularity to the Examiners.

Lastly, in 1838, when teachers of anatomy were restricted to their own department, twelve, instead of six, months' attendance on Practical Anatomy was required.

These changes mark both the progress and the diffusion of anatomy. Contrast the nature of the anatomical course in the time of the second Monro with that of the present day. Monro's course embraced not only anatomy, but nominally the whole of surgery, and a good deal of practice of medicine and physiology too, and he was at the same time not only in practice but the busiest consulting physician in Edinburgh. Now, even the anatomist who keeps to his subject finds it difficult to give in one session a complete, much less an exhaustive, view of his science. The lateral extension of anatomy by the diffusion of a practical knowledge of it among the members of the medical profession has gone on no less rapidly. Less than a generation ago it was no uncommon thing to find medical practitioners who had never dissected, and few except those attached to the medical schools would venture to perform a difficult surgical operation. Irrespective of other causes of progress, this diffusion of anatomical knowledge alone must have greatly increased the utility of the medical profession. To the old system, besides better means of illustration in the lecture-room, there has been added the great department of practical instruction, absorbing much of the teacher's time. To have the science of anatomy, and its application, expounded by the anatomist in the lecture-room is of unquestionable importance; but this must be accompanied by careful instruction of individuals in the practical rooms. It is the combination of the two which constitutes a good school of anatomy.

Part Second.

REVIEWS.

A System of Medicine. Edited by J. Russell Reynolds, M.D., F.R.C.P. Lond., Professor of Clinical Medicine in University College, etc., etc. London: Macmillan and Co. 1866.

The recent completion of the "System of Surgery" rendered it almost certain that a similar work on Medicine would soon follow; and we are glad to find that the "System of Medicine" has fallen into the hands of such an able editor and enterprising publisher as Dr Russell Reynolds and Mr Macmillan. The present handsome volume of 950 pages is the first instalment, and will be followed by two others, at, we hope, as brief intervals as possible.

The Editor, in a well-written introduction, gives a short outline of the principles of General Pathology, treating of Disease in general, its causes, symptoms, terminations, diagnosis, prognosis, and of the nomenclature and classification of diseases. We agree with Dr Reynolds in thinking that, in the present position of medicine, it is impossible to construct a satisfactory scientific classification of diseases. Many such attempts have been made, but have all proved failures; and we think he has come to a wise decision in adopting an arrangement which shall possess the greatest amount of practical advantage. His arrangement is the following:—Diseases are divided into two great groups, the first embracing those in which the whole organism appears primarily deranged; the second, those in which special organs are affected. The first group is subdivided into two classes, according as the disease appears to be developed by causes acting from outside the body, or to be produced by some internal changes; the first class, embracing such diseases as influenza, malarial and specific fevers, cholera, croup, hooping-cough, constitutional syphilis, glanders, erysipelas, and the like; the second, treating of scurvy, purpura, rickets, gout, rheumatoid arthritis, rheumatism, and gonorrhœal rheumatism. The second great group comprehends diseases of the cutaneous, the nervous, the circulatory, the respiratory, the digestive, the urinary, the reproductive, and the locomotive systems.

This arrangement is convenient practically, but we think it might have been improved if the small amount of theory which enters into its formation had been discarded. In various cases, it may be doubtful whether the cause of disease has acted from without, or whether it has been generated within the organism; and, in the latter case, whether the primary cause was not really external.

Thus it seems difficult to understand why constitutional syphilis should be grouped among the diseases, the causes of which operate from without, while gonorrhœal rheumatism is classified amongst those determined by conditions existing within the body. Scurvy is included in the second group; but the very first words of the definition given of it by the author of the treatise upon it would have induced us to refer it to the first group. Dr Buzzard thus commences his definition,—"Scurvy, or scorbutus, as it is technically called, is a peculiar state of mal-nutrition, supervening gradually upon the continued use of a dietary deficient in fresh vegetable material, and tending to death, after a longer or shorter interval, if the circumstances under which it arose remain unaltered." In scurvy, the cause of the symptoms is probably an abnormal condition of the blood; but this abnormal condition of the blood has been produced by an improper dietary. It makes no difference that the impropriety of the dietary has depended upon the absence from it of certain ingredients, for, if the withdrawal of certain elements from the food, and the consequent impossibility for the blood becoming properly nourished, is to be considered as a condition existing within the body, death from starvation would necessarily be brought under the same category.

The number of subjects treated of in this volume, and, we may add, the little novelty which can be introduced into the consideration of many of them, prevent us from attempting to give anything like a general *resumé* of the work; we must content ourselves with referring to a few papers to which some special interest appears to attach.

The two first articles, on influenza and malarial fevers, are written respectively by Professors Parkes and Maclean, both now of the Army Medical School. They are characterized by the soundness of their pathology, the accuracy of their descriptions, and the value of their practical recommendations. The article on dysentery is also by Dr Maclean;—we allude to it chiefly from the strong evidence it bears to the value of the treatment by ipecacuanha of the acute form of the disease. Dr Maclean sometimes begins with ipecacuanha at once; sometimes commences the treatment by administering a full dose of Battley's sedative, or of laudanum, in order to make the stomach more tolerant of the remedy, and to restrain nausea and vomiting. Half an hour after the sedative, twenty-five or thirty grains of ipecacuanha are given in as small a quantity of fluid as possible, a little syrup or orange-peel covering the taste. The patient is kept perfectly still, and should abstain from fluid for at least three hours. If thirsty, a little ice may be given him to suck, or a teaspoonful of water may be allowed. "It is seldom," says Dr Maclean, "that, under this management, nausea is excessive, and vomiting is rarely troublesome, seldom setting in for at least two hours after the medicine has been taken. The abdomen should be covered with a large sinapism, or a sheet of spongio-piline, sprinkled with a little turpentine, after having been wrung out of hot water. In from eight to ten hours, according to the urgency of the symptoms, and the effect produced by the first dose, ipecacuanha, in a reduced dose, should be repeated, with the same precautions as before. All who have had opportunity of trying this mode of treating dysentery can bear witness to the surprising effects that often follow the administration of one or two doses of ipecacuanha given in this manner. The tormina and tenesmus subside, the motions quickly become feculent, blood and slime disappear, and often, after profuse action of the skin, the patient falls into a tranquil sleep, and awakens refreshed. The treatment may require to be continued for some days, the medicine being given in diminished doses—care being taken to allow a sufficient interval to admit of the patient taking some mild nourishment suited to the stage of the disease."

Under the old system in Bengal, the mortality from 1812 to 1853-54 amounted to 88·2 in the thousand; in 1860, when large doses of ipecacuanha were almost exclusively employed, the mortality was 28·87 per thousand. The results in the Madras Presidency were equally satisfactory. For the introduction of this mode of treatment the profession is chiefly indebted to Mr Docker of the 7th Royal Fusiliers.

The article on Epidemic Cholera is written by Dr Goodeve, Surgeon-Major in the Bengal Army, who, from the position he holds as First Physician to the Medical College Hospital, Calcutta, has had abundant opportunities of familiarizing himself with this terrible disease. Dr Goodeve commences with some interesting observations on the cause of cholera, in which he shows that all known atmospheric or telluric agencies are unable to account for its origin or propagation. He does not deny that the disease may be contagious, but like most Indian physicians, believes that its contagious property is very slight. Though attaching considerable weight to the views of Dr W. Budd, who believes that the disease is propagated chiefly by means of the discharges of patients suffering from it, Dr Goodeve points out that *fresh* cholera discharges, at all events, cannot be very virulent, as he has often seen the hands of attendants, the sheets, the beds, and the floor soiled with the rice-water stools, and yet he has never known the disease to spread in the wards of an hospital. Dr Goodeves' own conclusions seem, in the present state of our knowledge, as rational as any other:—" May it not be a mistake to consider the specific cause at all as a simple body, either generated from without, and air-wafted to a particular spot, and then multiplying itself indefinitely, or as a locally-generated agent, and spreading over certain areas. Might it not be more in accordance with facts to suppose that neither a miasm from without, nor a miasm from within, exclusively contains the specific poison? Might it not be that two factors are needed, the one some air-borne element or some dynamic modification of atmospheric elements coming from without, the other some local element; neither being potent unless united? The peculiar atmosphere sweeps along hither and thither, and it is only when it meets with the other peculiar substance that the poison is generated. It may be that the cholera evacuation is the most prolific of the peculiar local agents. Some general, not local law, seems to govern all cholera epidemics. Contagion from cholera discharges may operate, but there must be something beyond this."

Dr Goodeve gives a clear account of the symptoms and progress of cholera, but there is little which seems to call for special remark. An important statement, however, is that "in numerous cases there is relaxation of the bowels for some days or hours before the real attack begins." The existence of this premonitory diarrhœa has of late been disputed, and it has been maintained that cases of diarrhœa in time of cholera are not likely to become developed into that disease; accordingly, we are glad to find Dr Goodeve maintaining what we fully believe to be the orthodox doctrine. A change appears to have taken place in cholera, as it prevails in India. Formerly, rapid recoveries from the stage of collapse, without any secondary fever, were more common than now. In the present day, according to the best observers, consecutive risks are as common in India as in Europe.

We make one quotation from Dr Goodeve's section on the pathology of cholera, with which we entirely agree. "It has been argued that the vomiting and purging are salutary, and that they eliminate the poison. It is very questionable whether fluxes, produced by organic poisons, are necessarily eliminative of the actual poison that was introduced into the system, or of its products. Whether the exudations in cholera are eliminative or not, there can be but little doubt that they are very destructive methods of cure. If this purging were beneficial, we should expect to see that cases of cholera with preliminary diarrhœa would be slight; whereas we often see that a man has diarrhœa for a week or more, quite as copious as could be produced by a few doses of castor oil, and yet these cases often pass into profuse purging, collapse, and death. Most men who have had much experience in cholera will say that when they have succeeded in checking the discharge, before collapse comes on, their patients are saved. They justly fear the result of active purgative medicines given in seasons of cholera. It is hardly possible that experience can have quite gone wrong in these matters. We do not know how the poison may be eliminated. For aught we know, it may be decomposed in some way, and not eliminated at all in its entire state." From what we have heard of the results of the eliminative, or castor-oil treatment of cholera in London during the present epidemic, we see no reason to alter our opinion regarding the propriety of endeavouring to stop excessive discharges as soon as possible.

Dr Goodeve's treatment of cholera may be briefly epitomized.

During the stage of evacuation, he endeavours to check the discharges by the administration of opium, acetate of lead, or other astringents. Stimulants are not generally required; but if the pulse begin to flag, brandy and iced water may be given in small quantities. Cramps are generally relieved by friction with chloroform, or with the hand; if severe, by the inhalation of small quantities of chloroform. During the stage of collapse, medicine is of little or no use. Opium, in particular, should be entirely avoided, as, if retained, it might afterwards be attended with disastrous consequences. In the worst cases, stimulants are of little avail. Ether, ammonia, and small quantities of brandy may be cautiously employed. If the pulse revives under their use, and falls back on their discontinuance, they may be cautiously persisted in; otherwise they, especially the alcoholic stimuli, should not be persisted in, for if not useful now, they may be hurtful in the latter stages. Cold water may be freely given, or, still better, iced water, or pieces of ice. During the stage of reaction, the patient "is best left to nature, a little liquid food, and cold water." The great indication to be fulfilled is to restore, if possible, the renal secretion. This is often difficult, as the kidneys are gorged with blood. When there is suppression of urine, purging, if present, should not be checked. Cold water is the best diuretic, sinapisms, dry or wet cupping should be applied to the loins.

We believe that, in the present state of our knowledge, the treatment laid down by Dr Goodeve (we have almost entirely omitted details) is, to say the least, as likely to be successful as any other.

Mr Marston has written an excellent chapter on small-pox. From his long residence in the Small-Pox Hospital, he has probably had greater opportunities of making himself familiar with the disease than any man living. Of these opportunities he has fully availed himself, and the present paper contains the results of his matured experience. Certainly, there is not much new to be said on small-pox, but Mr Marston has succeeded in giving greater precision to our knowledge on several points. The duration of the stage of incubation of small-pox, and of the initiatory fever, has been differently stated by different observers.[1] Dr Gregory, in his work on eruptive fevers, gives the usual duration as twelve days; others state it as from ten to sixteen. The length of the period of initiatory fever has usually been stated as *three full days*; and it has usually been considered a bad sign, as indicating that the disease would probably be confluent, if the eruption appeared sooner. Mr Marston's statements on both points are very precise: "Small-pox appears on the skin on the fourteenth day after the infection of the disease has been received into the system, the precise time being after thirteen times twenty-four hours have elapsed from the moment of taking the disease. This time will, of course, occupy twelve whole days, and part of two others. It is believed by the writer that the time from taking the disease to its appearance on the skin is never longer than fourteen days, and his attention has been constantly directed to this subject for upwards of twenty years." Again, "The ordinary course is this,—after twelve days' freedom from illness, there is severe indisposition for forty-eight hours, and then the eruption begins to appear. This is the almost invariable course. Still it is not invariable. In a few cases, but very few, there is more or less illness all through the period of incubation. The patient has not been so well as usual; experienced even at this time of taking the disease some unpleasant sensation; felt some nausea, or giddiness, or sense of alarm, without knowing why it had happened."

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[1] It may seem singular that variety of opinion should still remain upon this point, but it must be borne in mind that individual differences may exist, and that comparatively few cases are available in the inquiry.

A very valuable feature in Mr Marston's essay, is the proof he has given, from his own experience, that the protective power of vaccination is, up to a certain point, in proportion not only to the excellence but to the number of the vaccine cicatrices. It is too commonly believed that a single good vaccine cicatrix is a proof that the system has been sufficiently protected from small-pox. This, however, is not the case, as the following statement of Mr Marston's results will show:—

Mortality from small-pox among the unvaccinated, ...	37	per cent.
Mortality among said to be vaccinated, but having no cicatrix,	23·57	„
Mortality among vaccinated, with one cicatrix, ...	7·73	„
„ „ „ „ two cicatrices, . . .	4·70	„
„ „ „ „ three cicatrices, . .	1·95	„
„ „ „ „ four or more cicatrices,	0·55	„

The next paper, by Dr Cator Seaton, on Vaccination, is also a very good one. He puts the results of Mr Marston's experience in a very striking light, and gives excellent rules for the performance of vaccination, and for the precautions to be attended to in the operation. His last section is on "the alleged dangers of Vaccination." Dr Cator, like all those who have had much experience in vaccination, does not believe in the transmissibility of skin diseases, or scrofula, by means of the vaccine virus; this point is therefore dismissed with a brief notice, but as recent events have re-opened the question of the possibility of transmitting syphilis by vaccination, this question is considered more in detail. What these events were, were the outbreak of endemic syphilis at Revalta in 1861, traceable, it was said, to a vaccinal origin, and the occurrence of one or two similar cases in Paris in the same year. What has been maintained in these cases is, that when vaccine matter is taken from a syphilitic child, there may be a two-fold inoculation, vaccinia being transmitted through the vaccine lymph, syphilis through the blood which has been allowed to mix with the vaccine matter. We cannot follow Dr Cator into his remarks on this point we agree with his opinion that it has not been proved that the alleged double inoculation really took place, and we heartily concur in his concluding recommendation, "But while the communication of syphilis in vaccinating, through the careless inoculation of blood, must not be accepted as proved, it behoves the practitioner, bearing in mind the duty of avoiding every possible risk, to be more than ever careful to vaccinate only from the healthiest children, from the most perfect vesicles at the proper period of their course, and with pure, unmixed vaccine lymph, free from the slightest stain of blood."

The article on Typhus Fever is written by Dr George Buchanan, of the London Fever Hospital. It contains a good account of the disease, and some very judicious remarks on its treatment. Dr Buchanan is not prepared to go so far as Dr Murchison in believing that typhus may, by overcrowding, be generated *de novo;* for our own part, we think that the arguments brought forward on this point by Dr Murchison are irresistible.

Dr John Harley, Assistant-Physician to the London Fever Hospital, writes the article on Enteric Fever. A very disproportionate amount of space has been assigned to it; while Dr Buchanan's paper Typhus occupies thirty pages, Dr Harley's extends to nearly eighty. We give an abstract of Dr Harley's views of the pathology of the disease. The liver in almost every case of enteric fever is found enlarged, and in every case is found to have undergone more or less fatty deneration. The early symptoms of the disease indicate derangement of the hepatic functions, and a defective secretion of bile. This may be produced in one of two ways; it may be due either to severe vascular congestion, in which other internal organs participate; or it may be the effect of something morbid carried by the portal vein from the intestines to the liver, which acts directly on its secreting corpuscles, and paralyzes its functions. This must lead to diminished attraction between the blood and hepatic corpuscles, and hence to congestion of the portal system. The congested capillaries of the intestines relieve themselves by watery evacuations. Farther, it is probably a function of the liver to prevent putrid decomposition within the body. If the functions of the gland be depressed, a septic poison may be generated within the body, and produce the same symptoms as those set up by a poison introduced from without. So long as the liver is healthy any septic poison taken into the alimentary canal would generally be neutralized, but if the gland be torpid at the time, the unaltered poison entering the liver would arrest the secretion of that fluid which would have rendered it innocuous. "Primary vascular congestion of the liver, no matter how produced, leads to the vitiation of the secretions of the alimentary canal; nervous exhaustion results from arrested nutrition. Under these conditions the liver begins to degenerate, and the intestinal mucous membrane tends to ulcerate, the blood is imperfectly degenerated, and general febrile disturbance ensues. Surely if high fever, violent delirium, and coma, are the consequences of acute suppression of the bile, the pyrexia, headache, and the most severe delirium which ever accompanies enteric fever may be fairly attributed to that diminution and derangement of the hepatic function which invariably accompanies this disease." The diarrhœa, Dr Harley supposes to be due rather to congestion and local irritation than to attempts to eliminate a poison; the chyme no longer being prevented by the bile from decomposing, fermentation with evolution of gas and tympanitic distention follow. "The impure chyme irritates the debilitated and congested mucous membrane, and what wonder then if inflammation, ending in ulceration of Peyer's patches and the follicular glands should result?" But why, it may be asked, should the glands in the lower part of the ileum be most affected? Dr Harley has a threefold answer to this question:—*First*, There is a greater tendency to congestion of the lower part of the intestine, and the glands are most abundant there; *second*, The defective bile probably still contains enough of its essential constituent to maintain healthy action in the upper parts, this being deficient in the lower part, unhealthy action is set up; *third*, The localization of the intestinal disease may be supposed to be due to derangement of that particular part of the sympathetic system which is distributed to the lower part of the ileum. But why does the large intestine escape? "Because," says Dr Harley, "the irritation set up in the lower part of the ileum by the vitiated bile gives rise to such a copious exudation of fluid, that the irritating matter is diluted, and, at the same time, so rapidly carried through the great intestine, that the lower portion of the alimentary canal usually escapes any severe implication in the intestinal basin."

This theory, no doubt, is very ingenious, but we cannot consider it as satisfactory. Without alluding to the unsatisfactory nature of Dr Harley's explanations as to why the lower part of the ileum is chiefly affected, we do not consider that in typhoid fever there is any very special hepatic affection. Fatty degeneration of the liver, in our own experience, is quite as common in typhus as in enteric fever, and no mere amount of hepatic congestion or degeneration will lead to the peculiar form of ulceration in the absence of a specific cause. Led away, doubtless, by his pathological opinions, Dr Harley recommends the use of mercury, and in a strangely ungrammatical prescription orders a mercurial, which, "if necessary, may be continued until its constitutional effects—slight tenderness of the gums and fetor of the breath—begin to appear." This mode of treatment, it it scarcely necessary to say, we entirely disapprove of.

Dr Warburton Begbie contributes the next paper, an interesting and well-written one, on Relapsing Fever.

The articles on Glanders and Hydrophobia are the combined production of Professor John and Dr Arthur Gamgee, and have therefore the great advantage of uniting what is known on these subjects both by veterinarians and physicians.

Dr Garrod contributes excellent papers on Gout, Rheumatoid Arthritis, and Rheumatism, which contain his matured opinions regarding diseases which for many years he has made special subjects of study.

We have, we find, omitted to allude to an admirable paper on Constitutional Syphilis, by Mr Jonathan Hutchinson, whose esearches on this subject are well known.

The Editor, besides the introductory essay, contributes a short but very excellent paper on Erysipelas.

We have only, in conclusion, to express a very favourable opinion of the volume as a whole; no doubt we miss some names we should have expected to have met with; still the papers are generally well up to the present state of medical science; and the work, when completed, will form a valuable addition to the library of the practitioner.

On Railway and other Injuries of the Nervous System. By JOHN ERIC ERICHSEN, F.R.C.S., Professor of Surgery and of Clinical Surgery in University College, Surgeon to University College Hospital, Examiner in Surgery at the University of London, etc. Pp. 144. London: Walton and Maberly: 1866.

RAILWAY compensation cases have, during the last few years, enjoyed the bad pre-eminence of exhibiting how doctors may disagree, to the puzzlement of juries and the amusement of counsel. It was hard enough to settle whether this man was a murderer or a maniac, that one, an idiot or a prodigal; six doctors who approved of the wholesome discipline of the gallows, or the restraint of the asylum, might be defeated by seven who voted for temporary seclusion for the maniac, or for the fresh air of the coach-box for the amiable eccentric. It seems, however, to be harder still to decide whether the sufferer claiming damages after a railway collision be a shattered invalid or a scheming impostor. When a leg is smashed and requires amputation, there can be no doubt as to the accident; the question narrows itself to the value of the limb. We are told that, on one line, a leg belonging to a guard or porter is valued at the curiously uneven sum of £27: broken ribs may vary from £3 to £100 each; and we have known *one* broken nose at least, compromised for £15.

But there is one class of cases which railway directors and shareholders must regard with fear and hatred, and surgeons with anxiety, *i.e.*, those chronic weary cases of concussion of the spine, sprain of the back, osteo-myelitis of the vertebral column, with the attendant evils of shattered nervous energy, deafness, blindness, and general break-up of the system, which are so often the result of the shock of a railway collision, and so rarely caused by other accidents as to be called by some surgeons "railway spine."

To describe and illustrate this form of injury is the aim of the present little treatise; and we believe, from the care with which it is drawn up, and the accurate description it gives of the symptoms of the disease, it will prove a most valuable addition to the surgical literature of the day, and a great assistance to the surgeon both in diagnosis and prognosis.

It is divided into six lectures. The first, which is shorter than the others, and is introductory, commences with a defence of, or rather apology for, the too frequent discrepancies between the evidence of different medical men in courts of law, and then describes an interesting case of concussion of the spine which occurred a century ago, and which resembles in many particulars the "railway spines" of the present day.

Lecture II. describes the effects of severe blows on the spine, with cases and post-mortem appearances.

Lecture III. recounts some of the remarkably persistent and severe effects of comparatively slight shocks to the spine, and gives some interesting and illustrative cases, some the results of railway accidents, others caused by falls, carriage accidents, etc.

Lecture IV. is devoted to the very puzzling and insidious results of *shock* to the nervous system, in which no blow or injury of the head or spine has been inflicted, but the whole system has received a shake, or the neck, back, or loins has been sprained or wrenched. Several of the cases recorded are already to a certain extent known to the profession, from having been tried by juries for the purpose of awarding compensation. Mr Erichsen describes the symptoms in the most accurate and vivid manner, and must be a most powerful witness for the plaintiff, from the very unfavourable prognosis he gives as to the ultimate recovery in such cases.

Lecture V. describes the symptoms of railway concussion. Did space permit, the whole of this might be extracted with advantage; one or two quotations must suffice to serve as a specimen of the style.

After describing the shock to the system in general that succeeds a severe railway accident, the mental anxiety and feeling of general ill health, Mr Erichsen proceeds to analyze the symptoms in detail, under the various heads of memory, temper, sleep, etc. The head symptoms are thus described:—

> "The head is usually of its natural temperature, but sometimes hot, as in Case 11. The patient complains of various uneasy sensations in it; of pain, tension, weight, or throbbing; of giddiness; of a confused or strained feeling in it; frequently, loud and incessant noises, described as roaring, rushing, ringing, singing, sawing, rumbling, or thundering. These noises vary in intensity at different periods of the day, but if once they occur, are never entirely absent, and are a source of great distress and disquietude to the patient."—P. 99.

The very various and peculiar alterations in the organs of special sense are then detailed. The intolerance of light and impairment of vision, the exaltation of hearing, and the loss of the sense of touch and appreciation of weight, are all frequent and distressing symptoms.

> "The attitude of these patients is usually peculiar. It is stiff and unbending. They hold themselves very erect, usually walk straight forward, as if afraid or unable to turn to either side. The movements of the head or trunk, or both, do not possess their natural freedom. There may be pain or difficulty in moving the head in the antero-posterior direction, or in rotating it; or all movements may be attended by so much pain and difficulty that the patient is afraid to attempt them, and hence keeps the head in its attitude of immobility."

The state of the spine, the real cause of these symptoms, is very characteristic. It has lost its mobility and suppleness, and moves as a whole; the patients cannot pick up anything from the ground without going down on one knee. For further details as to the spinal symptoms, and specially to the impairment of motor power, we must refer to the work itself. One last remark we must quote:

> "Although there is often a long interval between the time of the occurrence of the accident and the supervention of the more distressing symptoms, and the conviction of the serious nature of the injury that has been sustained, it will be found, on close inquiry, *that there has never been an interval of complete restoration to health.*"

The italics are our author's, and in this observation (if clearly proved) may be found one means of distinguishing real disease from feigned.

In Lecture VI. the diagnosis, prognosis, and treatment are given. The prognosis is not encouraging, and heroic treatment is out of the question. Perfect rest, both of body and mind, are the chief essentials.

One thing Mr Erichsen has most thoroughly proved in this excellent little work, that there really occur cases of thorough breakdown, the result of the shock of railway accidents; and he has given most valuable materials to assist the surgeon in distinguishing real cases from feigned ones.

One lesson we as surgeons should learn from the slow, insidious character of the symptoms, *i.e.*, to set our faces against the plan pursued by some railways, of intrusting their agent, sometimes even their surgeon, with blank cheque-books, with which they are at once and on the spot to settle with injured passengers, as great injustice may thus be done, and a man who has really been rendered an invalid for life, may receive less compensation than one who has merely had some superficial abrasion. Even a broken leg may be a much less severe injury in its results, than a twist of the spine, which may be at first little noticed. To quote an illustration used by Mr Erichsen at p. 94: "A watch falls to the ground; if the glass is broken, the works are rarely damaged; if the glass escapes unbroken, the jar of the fall will usually be found to have stopped the movement."

A Practical Treatise on Fractures and Dislocations. By FRANK HASTINGS HAMILTON, A.B., A.M., M.D., Professor of the Principles of Surgery, Military Surgery, and Hygiene, and of Fractures and Dislocations in Bellevue Hospital Medical College; Surgeon to Bellevue Hospital, etc. Third Edition. Revised and Improved. Illustrated with 294 Woodcuts. 8vo, Pp. 777. Henry C. Lea: Philadelphia. 1866.

THE first edition of this most excellent work was favourably reviewed in our pages less than six years ago.[1] That two editions of a work so large and costly, on such a limited subject, have been exhausted, is a strong evidence of the intrinsic merits of the book, and an encouragement to similar conscientious and exhaustive labour.

The work naturally divides itself into two unequal halves,—the first, and largest, containing fractures; the other, dislocations. A discussion of the subject of fractures in general, their causes, diagnosis, repair, and treatment, failure of treatment, and of incomplete or partial fractures, is contained in the first seven chapters. Simple and intelligible, the only criticism we would venture, is that the chapter on repair is hardly up to the present date in its pathology. The chapter on the general treatment of fractures by splints and bandages is most excellent, and the author's experience as to the relative merits of the various materials used for splints, or immovable bandages, will be read with much interest.

Of the plaster-of-Paris cases, which have of late years been recommended for the treatment of fractures, simple or compound, the whited sepulchres of some surgeons, Dr Hamilton writes:—

> "It is my impression, however, that this material is not well suited to the service of campaigns in this country, and that the opinions of foreign army surgeons as to its value must be taken with some allowance."

Special fractures are then discussed *seriatim*, from above, downwards—beginning with the bones of the nose and face, jaws, hyoid; then a chapter on fractures of the cartilages of the larynx; then of vertebræ, sternum, and ribs, scapula, and upper extremity, pelvis, thigh, and leg. Fractures of the skull are omitted, and, we think, wisely, as their discussion would have involved an entirely different series of considerations, bearing, as they do, on the condition of the contained organ, rather than on the simpler and merely dynamical relations of a broken limb.

In fulness of detail, simplicity of arrangement, and accuracy of description, this work stands unrivalled. So far as we know, no other work on the subject in the English language can be compared with it; for the standard treatises of Sir Astley Cooper, and R. W. Smith, are limited in their range. Malgaigne, in France, and, more recently, Gurlt in Germany, have each published very valuable and complete treatises on fractures and dislocations, in which Continental and even British cases, and museum specimens, are fully represented, and very varied methods of treatment are detailed.

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[1] Edinburgh Medical Journal for February 1861, p. 735.

Dr Hamilton, while omitting little or nothing of real value from European sources, has supplemented our previous knowledge by a very elaborate selection from the experience of American surgeons, collected both from published cases, and from much valuable information from his private friends. Many of these new cases are very interesting. Under the head of *treatment* of the different fractures, the well-known mechanical ingenuity of the American race has furnished Dr Hamilton with very numerous and complicated apparatus,—some useful, others useless, some positively dangerous. The author's own selection will be, as a rule, found sensible and trustworthy.

The work is most liberally illustrated by two hundred and ninety-four woodcuts, most of which are well executed, and those which illustrate treatment are quite intelligible. In short, we can most thoroughly recommend Dr Hamilton's book to all our readers, as, in every respect, a most successful realization of the author's aim, which, he tells us, was to produce "a treatise useful both to the student and practical man, and a reliable exponent of the present state of our art upon those subjects of which it treats."

While congratulating our trans-Atlantic brethren on the European reputation which Dr Hamilton, along with many other American surgeons, has attained, we also may be proud that, in the *mother tongue*, a classical work has been produced, which need not fear comparison with the standard treatises of any other nation.

On the Safe Abolition of Pain in Labour and Surgical Operations, by Anæsthesia with Mixed Vapours. By ROBERT ELLIS, Surgeon-Accoucheur to the Chelsea, Brompton, and Belgrave Dispensary; Author of "Disease in Childhood," etc. Pp. 80. London: Robert Hardwicke: 1866.

FROM the Report of the Boston Committee,[1] on the alleged Dangers from the Inhalation of Sulphuric Ether, the following sentences may be quoted:—

> "2*d*, It is now widely conceded, both in this country and in Europe, that sulphuric ether is safer than any other anæsthetic, and this conviction is gradually gaining ground.
>
> "6*th*, The advantages of chloroform are exclusively those of convenience. Its dangers are not averted by its admixture with sulphuric ether in any pro-

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[1] Report of a Committee of the Boston Society for Medical Improvement, on the alleged dangers which accompany the inhalation of the vapour of sulphuric ether. Boston, 1861.

portions. The combination of these two agents cannot be too strongly denounced as a treacherous and dangerous compound."—Pp. 17, 18.

And from the Report of the London Chloroform Committee, the following:—

> "It is extremely desirable to obtain an anæsthetic agent which shall be capable of producing the requisite insensibility, and yet is not so dangerous in its operation as chloroform."—Med.-Chir. Trans. for 1864, p. 340.
>
> "These considerations tend to establish the fact, that a mixture of ether and chloroform is as effective as pure chloroform, and a safer agent, when deep and prolonged anæsthesia is to be induced, while at the same time it is sufficiently rapid in its operation to be convenient for general use."—P. 342.

So much for contradictory reports of committees.

Mr Ellis's little work strongly supports the use of mixed vapours, especially the compound of alcohol, ether, and chloroform first proposed by Dr Harley, and recommended by the English Chloroform Committee.

The proportions are,	alcohol,	1 part.	Sp. G. 838.
Do.	chloroform,	2 „	„ 1497.
Do.	ether,	3 „	„ 735.

It was found that though theoretically this mixture might be a good one, in practice, from the differences in the vaporization of the three constituents, the relative proportion was not in the least maintained in the administration. With the view of getting over this difficulty, Mr Ellis has constructed a most ingenious instrument, which regulates vaporization, and also keeps the administrator informed as to the relative amount of each vapour that the patient is inhaling at any given time.

Among its other merits, one is claimed, which, judging from the recorded cases, it certainly has—cheapness. A lady was kept "deliciously comfortable" during the last three-quarters of an hour of labour, on the small quantity of alcohol ʒss., ether ʒi., chloroform ʒi. Of the safety, both of the mixture and the instrument, the author speaks in the highest terms,—far too highly, we fear, of the instrument. Can anything be more fatally encouraging to a careless or reckless nurse, than to hear, "it seems almost impossible to give a fatal dose of chloroform or ether by this apparatus?"—P. 38.

Too much is trusted to the instrument; and the mixture, which, in the inventor's hands, is both safe and manageable, might, by a slight mistake, be rendered very dangerous. The book is pleasantly written, the experiments seem to have been chosen with judgment, and conducted with care, and though we cannot by any means agree with all the author's conclusions, it is an interesting contribution to a most important subject.

Clinical Surgery:—On Diseases of the Testicle, Vesico-, and Recto-Vaginal Fistula and Ruptured Perinœum. By THOMAS BRYANT, F.R.C.S., Assistant-Surgeon, Guy's Hospital. Part VI., pp. 445-540. London: John Churchill and Sons. 1866.

We have already at various times had to notice favourably the preceding parts of Mr Bryant s work on Clinical Surgery. The present part exhibits the same qualities in the author, of care and perseverance, as its predecessors did. Well-considered pathology, and accurate description of symptoms characterize all that Mr Bryant does; his statistics seem carefully collected and tabulated; when finished, the work will doubtless prove a valuable contribution to surgical literature.

Part Third.

MEDICAL NEWS.

OPENING OF THE FACULTY OF MEDICINE, PARIS.

THE re-assembling of the Faculty of Medicine took place on Saturday the 3d of November. It was opened by Professor Wurtz, Dean of the Faculty, who commenced his address by deploring the death of Professors Malgaigne and Rostan, and the hopeless illness of Professor Jobert. Professor Jarjavay then read a discourse, giving an account of the life and works of Professor Malgaigne. The sitting terminated by an announcement of the prizes which had been gained, and of those to be competed for by students of the Faculty. On this, as on several former occasions, the meeting was disturbed by the riotous conduct of some of the students. In reference to this, the Gazette Hebdomadaire speaks as follows:—"This year, as has happened for the last three or four, the pleasure of the meeting has been destroyed by disorders which seem the result of a habit assumed by the present generation of medical students. Without exaggerating their importance, it is impossible to deceive one's-self regarding the symptoms of moral decadence which is displayed by our students of medicine by the annual renewal of such scenes. What is peculiarly painful in these manifestations is the stupidity and the coarseness of those who took an active part in them; for on Saturday there was not one of those motives, or even pretexts for emotion, which might trouble the ideas and over-excite a young and impressionable audience. What was the meaning of those imitations of the cries of animals, which degrade students of medicine to the level of the coarsest clowns? What was the meaning of the cries of 'Vive la raison,' 'Vive le materialisme,' 'Vive la liberte,' 'Vive la democratie'? whilst others, no doubt to avoid always repeating the same thing, called out every now and then 'Down with-so-and-so,' exactly at the moments when new and important ameliorations were announced."

FACULTY OF MEDICINE OF PARIS.

SEVERAL very important changes have taken place in the Faculty of Medicine of Paris, no fewer than five professors having resigned. Among these will be found the names of some of its most distinguished members. They are,—MM. Andral, Cruveilhier, Piorry, Trousseau, and Jobert (de Lamballe.) The following chairs are consequently vacant:—General Pathology and Therapeutics, Pathological Anatomy, Clinical Medicine (one chair), Materia Medica and Therapeutics, Clinical Surgery (one chair).

The following is the arrangement for the lectures during the present winter:—

Medical Physics, Professor Gavarret.
General Pathology and Therapeutics, vacant, supplied by Dr Racle.
Anatomy, Professor Jarjavay.
Medical Chemistry, Professor Wurtz.
Operations and Surgical Appliances, Professor Denovilliers.
Medical Pathology, Professor Monneret.
Surgical Pathology, Professor Richet.
Histology, Professor Robin.
Clinical Medicine, Professor Bouillaud; Professor Natales Guillot, supplied by Dr Bucquoy; Professor Grisolle, supplied by Dr Fournier; one vacant, supplied by Dr Maurice Raynaud.
Clinical Surgery, Professor Velpeau; Professor Nelaton; Professor Laugier; one vacant, supplied by Dr Houel.
Clinical Midwifery, Professor Depaul.

UNIVERSITY OF EDINBURGH—NUMBER OF STUDENTS.

The winter Session of the University of Edinburgh commenced on Thursday the 1st of November. The number of students matriculated at this date (23d November) is 1432. They are distributed as follows among the different faculties:—Arts, 692; Medicine, 394; Law, 287; Divinity, 59. Last year, at the corresponding date, the total number of matriculated students was 1391, distributed as follows:—Arts, 645; Medicine, 411; Law, 278; Divinity, 57. Though there is thus a slight diminution in the total number of medical students, there is, we believe, *an increase* in the number of first-year students.

MEDICAL SCHOOL, SURGEONS' HALL.

The Medical School, Surgeons' Hall, was publicly opened on Wednesday, the 31st of October. Dr Smith, President of the Royal College of Physicians, and Dr Dunsmure, President of the Royal College of Surgeons, were present, and took part in the proceedings. The opening address was delivered by Dr. P. H. Watson.

MEDICAL STUDENTS IN LONDON.

The total number of students who have commenced their studies in the London Medical Schools this year is 366, showing an increase over the number of last year. They are entered as follows:—Guy's, 94; St Bartholomew's, 65; University College, 58; King's College, 36; St Mary's, 29; St George's, 23; St Thomas', 15; Charing Cross, 14; Middlesex, 13; London, 11; Westminster, 8.

HONOUR TO MEDICINE.

The following Imperial recognition of our profession will be read with great pleasure in this country, where Dr Conneau is so well known. It appears from the *Evenément* that nearly every profession but that of medicine was represented in the French Senate. This anomaly has so astonished the Emperor, that instructions have been given that His Majesty's Physician Dr Conneau is to be promoted forthwith to a seat in the Luxembourg.—*Medical Times and Gazette.*

GREENOCK MEDICAL SOCIETY.

THE Annual Meeting of this Society was held on the 5th November, when the following gentlemen were elected office-bearers for session 1866-67:—Dr Mackie, *President;* Dr Richmond, *Vice-President;* Dr Marshall, *Treasurer;* Dr Wallace, *Secretary.*

CORRESPONDENCE.

CASE OF EXCISION OF ONE LATERAL HALF OF THE TONGUE.

(To the Editor of the Edinburgh Medical Journal.)

SIR,—As the subsequent history of a case of operation for cancer is more interesting to the profession than the account of the operation itself, I take this method of completing the case I published in the Number of the Edin. Med. Journal for October 1865. Last September I saw my patient and found her still quite free from disease. The half of the tongue left is soft and free from pain, and she can speak very fairly—quite intelligibly—and can masticate and swallow with perfect ease. It is now eighteen months since the operation, and I should think her freedom from any return hitherto affords good ground for hoping the cure will be permanent.—Yours truly,

193 Bath Street, Glasgow. GEORGE BUCHANAN.

PUBLICATIONS RECEIVED.

Adams,—Club-Foot: its Causes, Pathology, and Treatment. The Jacksonian Prize for 1864. By Wm. Adams, F.R.C.S., etc. London, 1866.

Barker,—Diseases of the Respiratory Passages and Lungs. By W. Goodyer Barker, M.B., etc. London, 1866.

Beatty,—Contributions to Medicine and Midwifery. By Thomas Edward Beatty, M.D., etc. Dublin, 1866.

Bennet,—Treatment of Pulmonary Consumption by Hygiene, Climate, and Medicine. By J. Henry Bennet, M.D., etc. London, 1866.

Broadbent,—Cancer: A New Method of Treatment. By W. H. Broadbent, M.D. London, 1866.

Compton,—Temperature in Acute Disease. By T. A. Compton, M.D. London, 1866.

Day,—Clinical Histories with Comments. By Henry Day, M.D., etc. London, 1866.

Flint,—Practical Treatise on the Physical Exploration of the Chest, and the Diagnosis of Diseases affecting the Respiratory Organs. By Austin Flint, M.D., etc. Philadelphia, 1866.

Frankland,—Lecture Notes for Chemical Students: embracing Mineral and Organic Chemistry. By Edward Frankland, F.R.S., etc. London, 1866.

Hamilton,—Practical Treatise on Fractures and Dislocations By Frank Hastings Hamilton, M.D., etc. Third Edition. Philadelphia, 1866.

Harley and Brown,—Demonstrations of Microscopic Anatomy. By Geo. Harley, M.D., etc. Edited By Geo. T. Brown, M.R.C.V.S., etc. London, 1866.

Harley,—Albuminuria, with and without Dropsy. By George Harley, M.D., etc. London, 1866.

Health of the Navy for 1863,—Return to House Commons, July 1866.

Heath,—The Endoscope in Urethral Disease. By Christopher Heath, F.R.C.S., etc. London, 1866.

Hirschfeld,—The Nervous System. By Professor Hirschfeld. Edited in English, by A. M. Macdougal, F.R.C.S. Illustrated by J. B. Léveillé. Part I. London, 1866.

Lee,—Animal Magnetism and Magnetic Lucid Somnambulism. By Edwin Lee, M.D., etc. London, 1866.

Mackenzie,—Use of the Laryngoscope in Diseases of the Throat. By Morell Mackenzie, M.D. Second Edition. London, 1866.

Nayler,—Practical and Theoretical Treatise on the Diseases of the Skin. By George Nayler, F.R.C.S., etc. London, 1866.

Waring,—The Tropical Resident at Home. By E. J. Waring, M.D. London, 1866.

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